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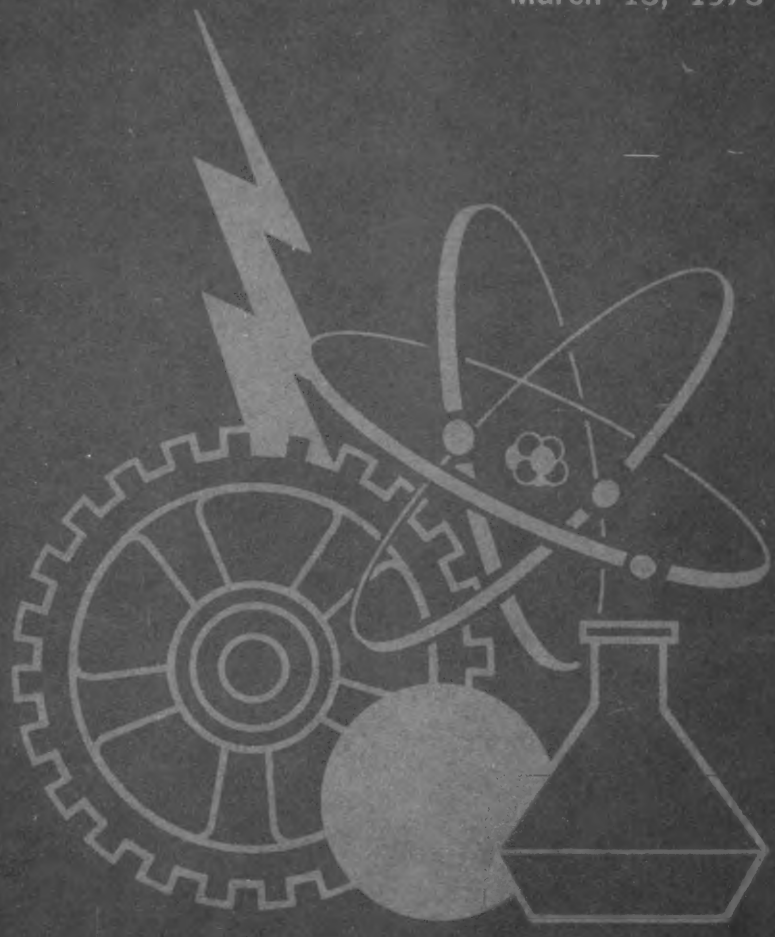

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March 13, 1973 Volume 908 Number 2

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office on the basis of 4 years or more service in the Examining Corps. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before April 9, 1973.

Gil, Joseph C., 3 Dorchester Drive, #106, Pittsburgh, Pa. 15241

Hightower, Judson R., 2059 Brookview Drive NW., Atlanta, Ga. 30318

Penn, William B., 8607 Sundale Drive, Silver Spring, Md. 20910

Reck, David L., 6305 Bahama Shores Drive S., St. Petersburg, Fla. 33705

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,075,355, J. G. W. Mulder, DISCHARGE TUBE, **filed** Mar. 21, 1972, D.C., S.D. Ind. (Indianapolis), Doc. IP72–C–135, *Kem Kool Products, Inc.* v. *Total Resources, Inc., doing business as Paramed Division.*

2,647,590, C. A. Anderson, Jr., HYDRAULIC ELEVATOR, **filed** Sept. 21, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2354, *Advanced Hydraulics, Inc.* v. *Hyster Company.*

2,827,665, Rogers, Bender and Ten Broeck, MANUFACTURE OF FLEXIBLE CELLULAR MATERIAL, **filed** Sept. 5, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2110–AAH, *United Foam Corporation* v. *Goodyear Tire & Rubber Company.*

2,830,431, N. E. Klein, STRAND TWISTING MACHINE; **2,834,178,** same, STRAND HANDLING MACHINE, **filed** Nov. 10, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c2324, *Deering Milliken Research Corporation* v. *C. Vecchioni, doing business as Industrial International Company.* On stipulation; this cause dismissed without prejudice and that the parties having agreed and made full settlement of all claims or causes of action by plaintiffs for infringement, July 28, 1972.

2,834,178. (See 2,830,431.)

2,841,124, H. S. Ackerman, MIDGET GAS FIRED HOT WATER BOILER; **3,320,933,** J. F. Baier, GAS FIRED HOT WATER BOILER, **filed** Apr. 10, 1972, D.C.N.J. (Newark), Doc. 640–72, *Hydrotherm, Inc.* v. *Intragas, S.A.* Stipulation of dismissal, May 23, 1972.

2,857,730, A. W. Vibber, APPARATUS FOR TWISTING AND PLYING STRANDS; **2,870,596,** same, TWISTING SPINDLE BALLOON CONTROL; **3,499,277,** same, APPARATUS FOR TWISTING AND PLYING STRANDS; **3,605,394,** same, STRAND PLYING METHOD AND APPARATUS; **Re. 24,380,** same, TWISTING AND PLYING SPINDLE BALLOON CONTROL, **filed** Jan. 12, 1972, D.C.N.J. (Newark), Doc. 62–72, *Alfred W. Vibber* v. *Uniroyal, Inc.*

2,870,596. (See 2,857,730.)

3,005,739, Lang and Ford, METHOD AND APPARATUS FOR MAKING MULTI-CONDUCTOR CABLE; **3,208,896,** same, APPARATUS FOR MAKING MULTI-CONDUCTOR CABLE, **filed** June 16, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1371–FW, *Spectra-Strip Corporation* v. *Circuit Assembly Corporation, Roger D. Lang and Kermit D. Lang.*

3,033,988, H. E. Edgerton, METHOD OF AND APPARATUS FOR THE CONTROL OF ELECTRIC IMPULSES; **3,519,879,** F. T. Ogawa, FLASH APPARATUS WITH AUTOMATIC LIGHT TERMINATION HAVING GATING AND ANTICIPATION MEANS; **Re. 26,999,** F. P. Elliott, CONTROL SYSTEM FOR TERMINATING THE DISCHARGE THROUGH A FLASH LAMP, **filed** July 21, 1971, D.C. Minn. (Minneapolis), Doc. 4–71–C–351, *Rollei-Werke Frank & Heidecke* v. *Honeywell, Inc.*

3,072,516, Bellinger and Chapdelaine, SOLUTION AND METHOD FOR BRIGHTENING CADMIUM; **Re. 26,130,** same, **filed** June 25, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1528, *Conversion Chemical Corporation* v. *Du Tone Chemical Co., Inc.* Consent agreement between parties, Mar. 3, 1972.

3,196,330, J. Moyson, SEMICONDUCTOR DEVICES AND METHODS OF MAKING SAME; **3,275,909,** F. W. Gutzwiller, SEMICONDUCTOR SWITCH; **3,350,611,** R. I. Scace, GATE FIRED BIDIRECTIONAL SWITCH; **3,476,993,** Aldrich and Holonyak, FIVE LAYER AND JUNCTION BRIDGING TERMINAL SWITCHING DEVICE; **Re. 27,120,** J. Moyson, SEMICONDUCTOR DEVICES AND METHODS OF MAKING SAME, **filed** Aug. 23, 1972, D.C., N.D. Tex. (Fort Worth), Doc. CA–4–2090, *General Electric Company* v. *ECC Corporation.*

3,208,896. (See 3,005,739.)

3,251,418, E. L. Condra, OIL WELL SCRAPER, **filed** Sept. 8, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2142–RJK, *Midway Fishing Tool Company* v. *Industrial Concepts Corporation.*

3,275,909. (See 3,196,330.)

3,320,933. (See 2,841,124.)

3,341,982, R. Torresen, BOWLING BALL POLISHING MACHINE, **filed** Mar. 3, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c498, *Brunswick Corporation* v. *Thumtectors, Inc.* Court has jurisdiction; judgment is in favor of defendants, and complaint as amended is dismissed for want of equity, Aug. 11, 1972.

3,350,611. (See 3,196,330.)

3,400,227, Lear and Auld, COMBINED RADIO AND MAGNETIC TAPE PLAYER; **3,403,868,** W. P. Lear, MAGNETIC TAPE CARTRIDGE SYSTEM; **3,437,762,** Lear and Auld, MULTI-TRACK TAPE CARTRIDGE PLAYER; **3,560,126,** W. P. Lear, MAGNETIC TAPE CARTRIDGE PLAYER SYSTEM, **filed** Apr. 26, 1972, D.C. Del. (Wilmington), Doc. 4370, *Motorola, Inc.* v. *Gates Lear Jet Corporation.* Same, **filed** May 12, 1972, D.C. Colo. (Denver), Doc. C–4003, *The Gates Rubber Co.* v. *Motorola, Inc. and Applied Appliances, Inc.*

3,403,868. (See 3,400,227.)

3,431,182, M. S. Frant, FLUORIDE SENSITIVE ELECTRODE AND METHOD OF USING SAME; **3,563,874,** Ross, Frant and Riseman, HALIDE-SENSITIVE ELECTROCHEMICAL ELECTRODES AND METHOD OF MAKING SAME; **3,591,464,** Frant and Ross, METHOD AND APPARATUS FOR DETECTING IONIC ACTIVITY; **3,672,962,** same, ION-SENSITIVE ELECTRODE AND METHOD OF MAKING AND USING SAME, **filed** Aug. 25, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72–C–1128, *Orion Research Inc.* v. *Brinkmann Instruments, Inc.*

3,437,762. (See 3,400,227.)

3,476,993. (See 3,196,330.)

3,499,277. (See 2,857,730.)

3,519,879. (See 3,033,988.)

3,539,031, T. A. Scanlon, SOUND TUBE HEAD SET EAR CUSHION AND AMBIENT NOISE PLUG; **3,623,571,** A. French, Stethoscope; **3,671,685,** J. P. McCabe, ELECTRO-ACOUSTIC HEADSET WITH RATCHET; **D. 222,144,** T. A. Scanlon, SOUND TUBE HEAT SET, **filed** Aug. 4, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72–C–1040, *Instrument Systems Corporation* v. *Avid Corporation.*

3,546,396, Marcheschi and Perkins, ENCLOSED TELEPHONE HAVING A RACEWAY FOR ITS CORD; **D. 210,378,** G. D. Perkins, TELEPHONE HANDSET; **D. 210,379,** same, FRENCH CRADLE TELEPHONE; **D. 211,645,** same, COMBINED TELEPHONE AND ENCLOSURE THEREFOR, **filed** Sept. 14, 1972, D.C. Conn. (Bridgeport), Doc. B–594, *United States Telephone Company* v. *American Telecommunications Corp.*

3,563,874. (See 3,431,182.)

3,560,126. (See 3,400,227.)

3,589,660, B. P. Dunckel, LIGHTING FIXTURE HANGER, filed Sept. 14, 1972, D.C., E.D. Pa. (Philadelphia), Doc. 72–1814, *National Service Industries, Inc.* v. *Keystone Lighting Corporation.*

3,591,464. (See 3,431,182.)

3,605,394. (See 2,857,730.)

3,623,571. (See 3,539,031.)

3,632,109, R. Dattner, MODULAR RECREATIONAL UNIT AND COMBINATIONS THEREOF; D. 218,455, same, PLAYGROUND CLIMBER; D. 218,456, same; D. 218,457, same; D. 218,458, same; D. 218,459, same; D. 218,460, same, COMBINED PLAYGROUND CLIMBER AND SLIDE; D. 218,765, same, filed Aug. 18, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72–C–1080, *2001 Inc.* v. *Novaglas Corporation.*

3,671,685. (See 3,539,031.)

3,672,962. (See 3,431,182.)

D. 210,378. (See 3,546,396.)

D. 210,379. (See 3,546,396.)

D. 211,645. (See 3,546,396.)

D. 218,455. (See 3,632,109.)

D. 218,456. (See 3,632,109.)

D. 218,457. (See 3,632,109.)

D. 218,458. (See 3,632,109.)

D. 218,459. (See 3,632,109.)

D. 218,460. (See 3,632,109.)

D. 218,765. (See 3,632,109.)

D. 222,144. (See 3,539,031.)

D. 224,008, Okuhara and Okuhara, MIRRORED COSMETIC CONTAINER, filed Sept. 11, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2249, *Hideno N. Okuhara et al.* v. *Creative Concepts Corporation et al.*

Re. 24,380. (See 2,857,730.)

Re. 26,130. (See 3,072,516.)

Re. 26,999. (See 3,033,988.)

Re. 27,090, H. A. Rutter, INDIVIDUAL DRY DOCK FOR BOATS, filed Sept. 22, 1972, D.C., N.D. Okla (Tulsa), Doc. 72–C–347, *Henry A. Rutter* v. *Barney Williams.*

Re. 27,120. (See 3,196,330.)

Certificates of Correction for the Week of Mar. 13, 1973

Re. 27,423	3,676,475	3,690,635	3,697,301
D. 224,850	3,676,612	3,690,735	3,697,525
3,520,972	3,678,033	3,690,822	3,697,551
3,542,753	3,678,146	3,690,872	3,697,773
3,587,282	3,678,176	3,691,140	3,697,802
3,587,283	3,678,375	3,691,187	3,697,834
3,597,008	3,679,397	3,691,484	3,698,186
3,615,406	3,679,755	3,691,616	3,698,192
3,616,440	3,681,093	3,691,825	3,698,233
3,624,066	3,681,441	3,692,108	3,698,278
3,625,330	3,681,992	3,692,191	3,698,571
3,627,453	3,682,373	3,692,199	3,698,746
3,627,581	3,683,271	3,692,572	3,698,968
3,630,725	3,683,614	3,692,615	3,699,041
3,632,584	3,684,069	3,692,791	3,699,048
3,632,801	3,684,278	3,693,055	3,699,247
3,633,725	3,684,551	3,693,117	3,699,272
3,635,546	3,684,922	3,693,148	3,699,276
3,635,981	3,685,059	3,693,430	3,699,638
3,639,348	3,685,405	3,693,452	3,699,763
3,639,478	3,686,400	3,693,775	3,700,004
3,642,649	3,686,581	3,693,822	3,700,035
3,642,813	3,686,744	3,693,828	3,700,078
3,642,975	3,686,880	3,696,860	3,700,101
3,643,407	3,687,427	3,694,069	3,700,209
3,644,838	3,687,855	3,694,260	3,700,214
3,646,458	3,687,995	3,694,286	3,700,282
3,652,388	3,688,051	3,694,301	3,700,439
3,655,657	3,688,239	3,694,587	3,700,565
3,656,799	3,688,448	3,694,631	3,700,644
3,658,802	3,688,568	3,694,739	3,700,674
3,660,415	3,688,767	3,694,818	3,700,773
3,660,427	3,688,781	3,695,009	3,700,775
3,663,150	3,688,839	3,695,173	3,700,882
3,664,782	3,688,853	3,695,401	3,700,912
3,665,538	3,688,915	3,695,419	3,701,045
3,668,184	3,689,211	3,695,662	3,701,255
3,669,708	3,689,255	3,695,726	3,701,425
3,671,098	3,689,382	3,695,758	3,701,836
3,671,354	3,689,383	3,695,841	3,702,044
3,671,399	3,689,475	3,696,071	3,702,617
3,671,542	3,689,489	3,696,100	3,702,696
3,672,731	3,689,604	3,696,310	3,702,712
3,673,187	3,689,618	3,696,338	3,702,784
3,674,567	3,689,694	3,696,823	3,702,909
3,675,216	3,689,804	3,696,871	3,703,068
3,676,093	3,689,992	3,697,065	3,703,899
3,676,233	3,690,132	3,697,069	

Disclaimers

3,019,497.—*Robert A. Horton*, Dover, N.J., *Richard L. Ashbrook*, La Porte, Ind., and *Roy C. Feagin*, Mountain Lakes, N.J. MAKING FINE GRAINED CASTINGS. Patent dated Feb. 6, 1962. Disclaimer filed Oct. 24, 1972, by the assignee, *Howmet Corporation*.

Hereby enters this disclaimer to claims 1 through 7 of said patent.

3,157,926.—*Robert A. Horton*, Cleveland, and *Richard L. Ashbrook*, Chesterland, Ohio, and *Roy C. Feagin*, Mountain Lakes, N.J. MAKING FINE GRAINED CASTINGS. Patent dated Nov. 24, 1964. Disclaimer filed Oct. 24, 1972, by the assignee, *Howmet Corporation*.

Hereby enters this disclaimer to claims 1 through 11 of said patent.

3,481,882.—*Michael A. Streicher*, Webster Farms, Del. CLEANING COMPOSITION AND METHOD OF CLEANING ARTICLES THEREWITH. Patent dated Dec. 2, 1969. Disclaimer filed Nov. 24, 1972, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby enters this disclaimer to claims 2, 6, 8 and 9 of said patent.

3,622,029.—*Gordon K. Ware*, Chicago, Ill. ELECTRICAL OUTLET BOX. Patent dated Nov. 23, 1971. Disclaimer filed Nov. 24, 1972, by the assignee, *Ware Fuse Corporation*.

Hereby enters this disclaimer to claim 9 of said patent.

3,635,321.—*Frazier N. James, Sr.*, Alexandria, Va. DOCUMENT VERIFICATION AND BANKING MACHINE. Patent dated Jan. 18, 1972. Disclaimer filed Nov. 1, 1971, by the assignee, *Allied Automation, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 5, 1987.

3,645,888.—*John C. Hayes*, Palatine, Ill. CATALYTIC REFORMING PROCESS. Patent dated Feb. 29, 1972. Disclaimer filed July 9, 1971, by the assignee, *Universal Oil Products Company*.

Hereby disclaims the portion of the term of the patent subsequent to May 11, 1988.

3,647,718.—*Walter L. Haden, Jr.*, Metuchen, and *Frank J. Dzierzanowski*, Somerset, N.J. MICROSPHERICAL ZEOLITIC MOLECULAR SIEVE COMPOSITE CATALYST AND PREPARATION THEREOF. Patent dated Mar. 7, 1972. Disclaimer filed June 4, 1971, by the assignee, *Engelhard Minerals & Chemicals Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 14, 1987.

3,657,069.—*Robert R. Candor*, Miami Township and *James T. Candor*, Washington Township, Montgomery County, Ohio. METHOD AND APPARATUS FOR TREATMENT OF SHEET-LIKE MATERIAL. Patent dated Apr. 18, 1972. Disclaimer filed Apr. 16, 1971, by the inventors.

Hereby disclaims the portion of the term of the patent subsequent to Jan. 18, 1989.

3,657,435.—*Frederik W. Stonner*, Chatham, N.Y. 17β-HYDROXY - 17 - ETHYNYL-4-ANDROSTENO-[3,2-c]-2'-(p-FLUOROPHENYL)PYRAZOLE AND COMPOSITIONS CONTAINING SAME. Patent dated Apr. 18, 1972. Disclaimer filed Aug. 5, 1971, by the assignee, *Sterling Drug Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 10, 1987.

3,669,637.—*Donald L. Klass, Barrington*, and *Carl D. Landahl*, Chicago, Ill. ODORANT REPLACEMENT IN GAS STREAMS. Patent dated June 13, 1972. Disclaimer filed Jan. 12, 1973, by the assignee, *Institute of Gas Technology*.

Hereby disclaims the portion of the term of the patent subsequent to Jan. 11, 1989.

3,699,181.—*Ronald A. Kmecak* and *Stephen M. Kovach*, Ashland, Ky. ALKYL TRANSFER OF ALKYL AROMATICS WITH GROUP VIB METALS ON MORDENITE. Patent dated Oct. 17, 1972. Disclaimer filed Dec. 20, 1971, by the assignee, *Ashland Oil, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 3, 1988.

Dedications

3,301,237.—*Erich Wolf*, Wiesbaden, Germany. TWO-STROKE INTERNAL-COMBUSTION ENGINE. Patent dated Jan. 31, 1967. Dedication filed Nov. 29, 1972, by the assignee, *Zweirad-Union A.G.*

Hereby dedicates to the Public the entire term of said patent.

3,575,448.—*Vincent Licari*, St. Joseph, Mich. FASTENER. Patent dated Apr. 20, 1971. Dedication filed Oct. 27, 1972, by the assignee, *Clark Equipment Company*.

Hereby dedicates to the Public the entire term of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 20, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	12-16-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-03-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	9-20-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-21-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	7-03-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition: Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-31-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-03-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-27-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	5-26-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-03-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-03-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-10-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-26-71

Expiration of patents: The patents within the range of numbers indicated below expire during March 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,736,898 to 2,740,116, inclusive
Plant Patents..... Numbers 1,457 to 1,466, inclusive

REISSUES

MARCH 13, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

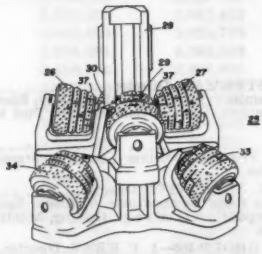
27,597
LARGE-DIAMETER EARTH BORING BIT

Milton L. Talbert, China Springs, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Original No. 3,633,691, dated Jan. 1, 1972, Ser. No. 17,663, Mar. 9, 1970. Application for reissue Apr. 4, 1972, Ser. No. 242,148

Int. Cl. E21b *9/24;* E21c *23/00;* E21d *3/00*

U.S. Cl. 175—334 12 Claims



A bit for drilling large-diameter holes. Cutters are arranged in a staged configuration around a central shaft. The innermost cutters are the same large cutters used at other locations on the bit allowing complete interchangeability. The innermost cutters are turned inward. This reduces the uncut bottom next to the pilot hole and provides a stronger bit because the central shaft has not been weakened by milling or other operations.

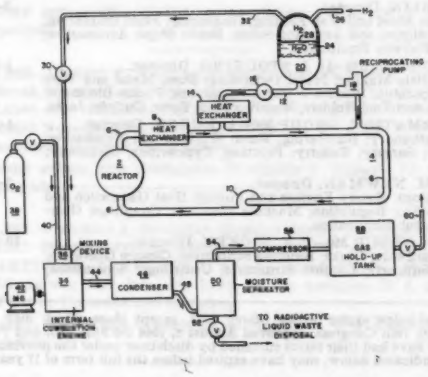
27,598
DISPOSAL SYSTEM FOR CONTAMINATED HYDROGEN FROM A NUCLEAR REACTOR

William E. Wright, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original No. 3,362,883, dated Jan. 9, 1968, Ser. No. 525,909, Feb. 8, 1966. Application for reissue Sept. 21, 1969, Ser. No. 869,970

Int. Cl. G21c *19/32*

U.S. Cl. 176—37 4 Claims



An apparatus for disposing of contaminated hydrogen gas containing potentially explosive quantities of oxygen and noxious proportions of radioactive fission gases; the apparatus including an internal combustion engine for converting small increments of hydrogen to water.

27,599
PROCESS FOR THE PRODUCTION OF A GAS CONTAINING GASEOUS HYDROCARBONS

Brian Hoyle Thompson and Binay Bhushan Majumdar, Solihull, London, England, assignors to The Gas Council, London, England

No Drawing. Original No. 3,591,356, dated July 6, 1971, Ser. No. 769,461, July 22, 1968. Application for reissue Mar. 15, 1972, Ser. No. 235,051

Claims priority, application Great Britain, Aug. 15, 1967, 37,530/67

Int. Cl. C10g *13/00, 13/30*

U.S. Cl. 48—213 9 Claims

A process for the production of a gas containing gaseous hydrocarbons by the hydrogenation of non-distillate hydrocarbon oils. The oil is first preheated in the liquid phase, and then introduced through an atomiser into a gas recycle hydrogenator in which the oil reacts under pressure with, and is continuously entrained into circulation with, a supply of hydrogenating gas. A gas containing gaseous hydrocarbons is formed by reaction of the oil and the hydrogen, and is continuously withdrawn from the hydrogenator. The process is primarily for the hydrogenation of nondistillate oils, such as crude petroleum and particularly light crude petroleum.

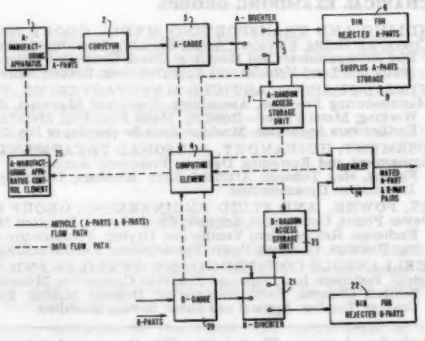
27,600
METHOD AND APPARATUS FOR SELECTING INTERFITTING PARTS FOR ASSEMBLY

Seymour Bederman, Yorktown Heights, and Larry G. Lankford, Mahopac, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 3,538,590, dated Nov. 10, 1970, Ser. No. 775,223, Sept. 30, 1968. Application for reissue Feb. 1, 1971, Ser. No. 111,777

Int. Cl. B23p *19/04;* B23q *17/00*

U.S. Cl. 29—407 41 Claims



This method and apparatus for selective assembly of parts accepts parts of a first class from a manufacturing source not under the control of the apparatus and parts of a second class from a manufacturing source under the

control of the apparatus. The parts are to be assembled in interfitting pairs, one part of the first class being assembled with a part of the second class. The selective assembly apparatus operates to maintain the clearance between the assembled parts of each pair within a clearance range which is substantially smaller than the manufacturing tolerance ranges for the parts of both the first and second classes.

PLANT PATENTS

GRANTED MARCH 13, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,317
BEGONIA PLANT

Otto Rieger, deceased, by Gertrud Rieger, legal representative, Nurtingen, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed June 30, 1971, Ser. No. 158,643
Int. Cl. A01h 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of begonia characterized particularly by its short squatty growth, with close internodes, its masculine flowers, its very floriferous habit, its short and strong stems, its deep dark shining red blooms which have superior keeping qualities, its heart shaped and pointed leaves, and its ease of propagation from leaf cuttings; and particularly distinguished from the variety Rieger's Schwabenland by its deeper red blooms, its shorter compact growth and its hard, pointed foliage.

3,318
BEGONIA PLANT

Otto Rieger, deceased, by Gertrud Rieger, legal representative, Nurtingen, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed June 30, 1971, Ser. No. 158,642
Int. Cl. A01h 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of begonia which is distinguished from the parent variety Rieger's Aphrodite by its light pink petal color and which, together with the parent variety Rieger's Aphrodite, distinguishes from other commercially available begonia varieties of this type by its numerous double azalea type flowers which are durable and long lasting, are borne, on trusses and which have few, if any, reproductive parts, its compact growth and self-branching habit, its dark green, resilient foliage which is relatively tolerant to handling and relatively resistant to disease, and by its soft type growth habit in spring months or in periods of restricted sunlight which allows the new variety to be cascaded or trailed.

3,319
BEGONIA PLANT

Otto Rieger, deceased, by Gertrud Rieger, legal representative, Nurtingen, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed June 30, 1971, Ser. No. 158,641
Int. Cl. A01h 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinctive variety of begonia characterized by its numerous double azalea type flowers which have superior durability and long lasting qualities and which continuously flower in the summer period for three to four months, its compact growth habit and prominent self-branching, its dark green, resistant, foliage which has a distinctive thin edging of red pigmentation, and characterized particularly when compared with the parent variety Rieger's Aphrodite by its cherry red flower color, its rapid overall growth, and it ability to be asexually reproduced by stem, leaf or terminal cuttings.

3,320
BEGONIA PLANT

Otto Rieger, deceased, by Gertrud Rieger, legal respresentative, Nurtingen, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed June 30, 1971, Ser. No. 158,640
Int. Cl. A01h 5/00
U.S. Cl. Plt.—68 1 Claim

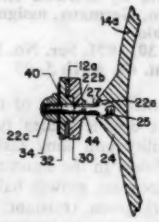
1. A novel and distinctive hybrid *Begonia elatior* variety characterized particularly by superior durability of the plant and its blooms under normal cultivation practices; the longevity of the blooms; the superior floriferous flowering trait producing bright, vivid orange-red colored bracts with a sharp contrasting yellow eye produced by the abundance of stamens and anthers; an overall larger bloom size; controlled flowering response which allows pot plant producers to flower this variety any season of the year; a vigorous upright growth habit that eliminates the necessity of staking; abundant, large waxy foliage that is resistant to mildew; and its ability to be propagated both by leaf cuttings and stem bud cuttings.

PATENTS

GRANTED MARCH 13, 1973

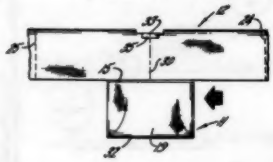
GENERAL AND MECHANICAL

3,719,954
HEAD SET CONSTRUCTION
Fred P. Beguin, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 12, 1970, Ser. No. 10,787
Int. Cl. A41d *21/00*
U.S. Cl. 2—209 **2 Claims**



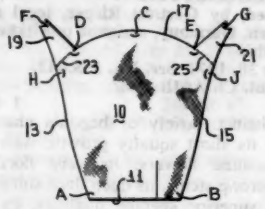
Headset construction including headband and earcups having connecting means therebetween allowing smooth dampened swivelling action of earcups into desired close-fitting positions against wearer's head and about his ears and with said connecting means arranged to allow headband to be readily adjusted to different lengths and pivoted relative to earcups so as to be worn in any one of several different positions as conditions of use require.

3,719,955
DISPOSABLE GARMENT AND METHOD AND APPARATUS FOR MAKING SAME
Frederick J. Hrubecky, Neenah, Wis., assignor to Kimberly-clark Corporation, Neenah, Wis.
Division of Ser. No. 834,993, June 20, 1969, Pat. No. 3,639,915. This application Jan. 25, 1971, Ser. No. 109,624
Int. Cl. A41d
U.S. Cl. 2—243 R **3 Claims**



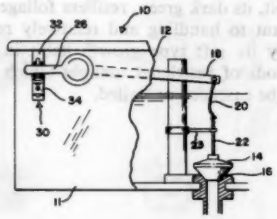
A disposable garment is composed of a rectangular torso section having its quarter sections folded inward to define front and back panels, and a rectangular yoke and sleeve section folded longitudinally, with the torso section secured between the edges of the folds of the yoke and sleeve section. Method and apparatus are provided for making the garment from two fabric webs.

3,719,956
UNDERARM CONSTRUCTION FOR GARMENTS
Florence Glassberg, 1489 Shore Parkway, Brooklyn, N.Y.
Filed Oct. 15, 1971, Ser. No. 189,601
Int. Cl. A41b *1/08*
U.S. Cl. 2—125 **6 Claims**



A sleeve and armhole arrangement includes a sleeve pattern having a top edge with an arcuate shoulder portion bounded by two relatively long acute angle projections. The projections extend a distance from the cuff which exceeds the distance between the apex of the arcuate shoulder portion and the cuff. The body pattern armhole is contoured to match the top edge of the sleeve portion. The resulting garment has an underarm region characterized by bias planes which yield in response to all possible arm movement and thereby provides extreme pliancy and comfort.

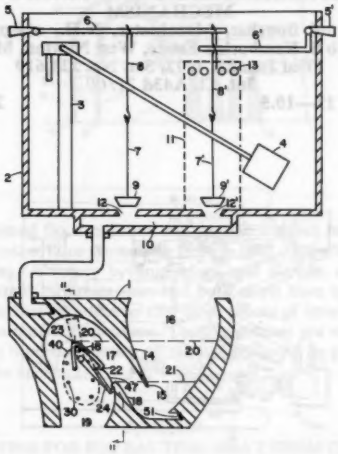
3,719,957
FLUSH TANK CONTROL
Rudolph T. Riedel, 7198 Sugarbin Street, Orlando, Fla.
Filed Oct. 14, 1971, Ser. No. 189,139
Int. Cl. E03d *1/34, 5/02, 5/10*
U.S. Cl. 4—67 **2 Claims**



A device for controlling and limiting the motion of the handle of the water storage tank of a toilet, such that the handle can be moved only a sufficient distance to bring about the flushing action required in a given instance, thus preventing the entire contents of the tank from being used except when actually needed. The water release valve of the water storage tank does not become free floating in the practice of my in-

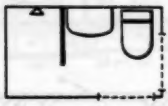
vention, but resides closely by its seat during a flushing operation, thus being in a position to readily return to such seat as soon as the handle is released, thereby effecting a daily savings of many gallons of water.

3,719,958
WATER CLOSETS
John Raymond Wilhelm, 11605 Split Hall Court, Rockville, Md.
Filed Jan. 24, 1972, Ser. No. 220,257
Int. Cl. A47k *17/00*; E03d *11/10*
U.S. Cl. 4—76 **3 Claims**



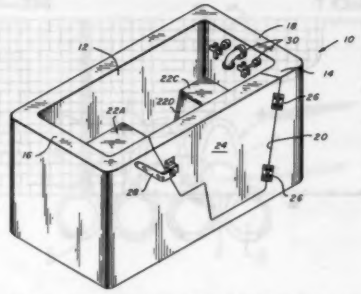
A valved by-pass connection between the water trap and sewer line of an otherwise conventional water closet to permit the establishment of an alternate water level capability in the toilet bowl to be used in association with a toilet tank that has full as well as fractional flush capability.

3,719,959
SWINGABLE WASH BASIN FOR COMPACT SHOWER-ROOM
Lars Ekstrom, 11, Stallbacken, Djursholm, Sweden
Filed Oct. 27, 1971, Ser. No. 193,069
Claims priority, application Sweden, Oct. 29, 1970, 14573/70
Int. Cl. A47k *1/04*
U.S. Cl. 4—168 **4 Claims**



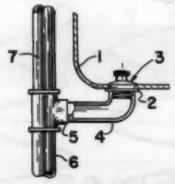
This invention relates to an arrangement, which reduces the space requirement for a hygiene-room by dual utilization of the floor surface fixtures of said room. A hygiene-room is defined as a room containing a wash-basin, shower-bath, water-closet etc.

3,719,960
BATHTUB HAVING IMPROVED SAFETY FOR INFIRM OR HANDICAPPED
Lionel E. Russell, Route 1, Oologah, Okla.
Filed Sept. 29, 1970, Ser. No. 76,504
Int. Cl. A47k *3/00*, *3/024*
U.S. Cl. 4—173 **2 Claims**



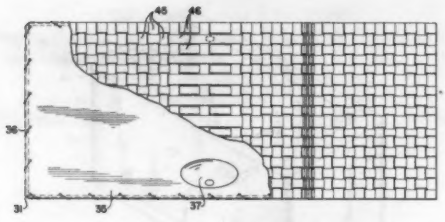
A bathtub affording improved safety, especially for the elderly or handicapped, including an opened top tub, the bottom of which has a seat-height horizontal portion extending from one end of the tub and a lower feet-receiving horizontal portion, one wall of the tub having a door opening extending from the top of the tub to the lower feet receiving portion of the tub bottom and the upper portion of the opening being of a width sufficient to expose part of the bottom seat-height horizontal portion, and a door pivotally supported to the tub so that, when the door is in opened position, a user may walk onto the bottom lower feet receiving portion or sit on the exposed part of the bottom seat-height horizontal portion, the door when closed permitting the tub to be filled with water to the height desired.

3,719,961
DRAIN SHOE PLUG
William E. Politz, Delphi, Ind., assignor to Stephen A. Young, Monticello, Ind.
Filed Oct. 30, 1970, Ser. No. 85,547
Int. Cl. A47k *1/14*
U.S. Cl. 4—295 **4 Claims**



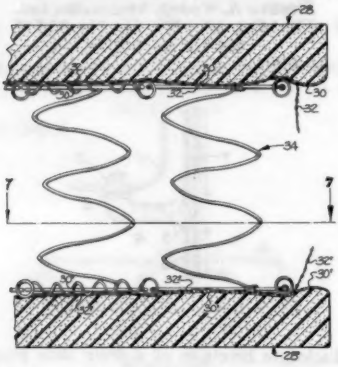
The disclosure herein is of a drain shoe plug of generally conventional use, as the same is required for waste and overflow units of bath tubs, involving the construction of a shoe plug wherein the same is of tubular nature, having suitable guide means therein formed by stamping, such guide means being affixed to the tubular mounting section of the shoe plug, and by reason of the configuration and formation of the same during the stamping operation, providing for raising and lowering of a stopper unit with suitable stop means being provided to facilitate positioning of the stopper unit for draining and to permit the same to shut the drain off in a somewhat conventional manner.

3,719,962
BODY SUPPORT FOR INVALIDS
Kathleen E. Burkley, 4075 Park Fulton Oval, Cleveland, Ohio
Filed July 1, 1971, Ser. No. 158,899
Int. Cl. A61g *7/02*
U.S. Cl. 5—91 **4 Claims**



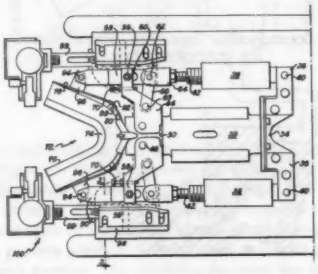
A bed or other body support structure for persons with disabilities. The structure provides means for relieving pressure on areas of the body having bed sores (decubiti and the like) and for hygenic deposit of body wastes. The supporting surface, which may be a bed, a wheelchair seat or the like, is formed of a plurality of criss-crossing fabric strips or bands stretched between opposite sides of a skeletal frame. A sanitary waste collection sheet is spaced below the supporting surface and is sloped so as to drain waste material to one or more drain outlets located above a suitable receptacle.

3,719,963
METHOD OF MAKING FOAM CUSHIONS AND PRODUCT FORMED THEREBY
C. Gordon Bullock, Jr., 76 Kimberly Ave., Asheville, N.C. 28804
Filed Apr. 1, 1971, Ser. No. 130,328
Int. Cl. A47c *27/04, 27/22*
U.S. Cl. 5—351 **6 Claims**



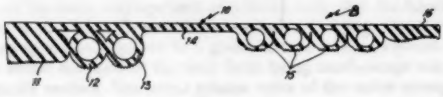
A method of making a foam cushion for use as a seat, mattress or the like including the steps of foaming a material in an open top mold to form a cellular pad having a dense upper crust, and supportingly positioning an open mesh fabric and an overlying spring assembly in floating relation on the foaming material. The open mesh fabric thereby becomes essentially embedded in the crust to reinforce the same, and the terminal face portions of the spring assembly are adhered to the crust to interconnect the various components. To form an innerspring mattress, the resulting structure is removed from the mold, inverted, and positioned on additional foaming material in a like manner. In a further embodiment, the spring assembly is positioned on the pad after the foaming process is completed. In this case, the originally unattached foam pad may be easily stored or shipped to a point of assembly where the spring assembly is later joined by hog ringing or the like. In order to densify the foaming material in this latter embodiment, a screen member having a weight and outline generally similar to that of the spring assembly may be removably positioned on the foaming material during the foaming process.

3,719,964
UPPER STRETCHING AND CLAMPING MECHANISM
Raymond Boucher, Manchester, N.H., assignor to Jacob S. Kamborian Estate, West Newton, Mass.
Filed Jan. 28, 1972, Ser. No. 221,619
Int. Cl. A43d *21/00*
U.S. Cl. 12—10.5 **2 Claims**



A machine for stretching an upper about the heel end of a last and clamping the heel portion of the upper to the last prior to wiping the margin of the heel portion of the upper against an insole located on the bottom of the last. The machine includes a U-shaped clamp pad having pad legs movable towards the last to effect the clamping and pincers mounted to the pad legs operative to grip the breast line portions of the upper margin prior to movement of the pad legs toward the last.

3,719,965
METHOD OF MAKING FOOTWEAR SOLES
Jacques Chevallereau, Juvisy Sur Orge, France, assignor to Ets Parttzky S.A., Mauleon-Soule, France
Filed April 13, 1971, Ser. No. 133,628
Claims priority, application France, April 20, 1970, 7014152
Int. Cl. A43d ; A43b *13/04*
U.S. Cl. 12—146 B **3 Claims**

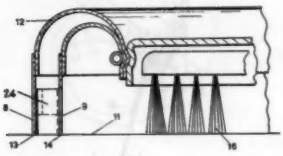


A method of making soles for shoes wherein the soles are cut from extruded material in strip form having a plurality of integrated cylinders extinding transversely of the strip. A relatively thick heel portion is extruded as part of the strip.

3,719,966
COMBINED FLOOR-POLISHER AND SUCTION CLEANER

George Laurence Lamont, New South Wales, Australia, assignor to Contract Cleaning Co. Pty. Limited, Hurlstone Park, New South Wales, Australia

Filed Feb. 9, 1971, Ser. No. 114,019
Claims priority, application Australia, Dec. 9, 1970, 3440/70
Int. Cl. A47l 5/10
U.S. Cl. 15—385 4 Claims

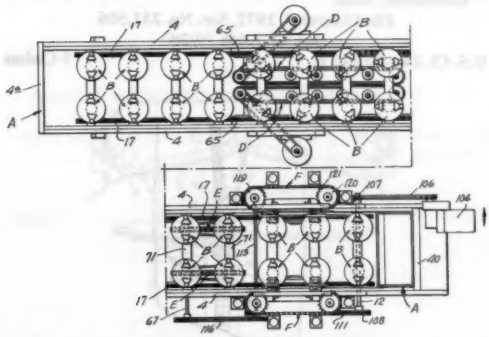


A combined floor polisher and suction cleaner having an inner and outer floor contacting flexible skirt depending from the housing. A rotary buffing means and suction means is located within the inner skirt and both skirts have apertures along their bottom edges so that large pieces of litter may be drawn into the suction means. These apertures are staggered so that any litter ricocheting off the buffer cannot be propelled through the apertures.

3,719,967
MACHINE FOR EXTRACTING MEAT FROM CRAB SECTIONS

Warren J. Craig, 245 Hawthorne Road, Ellicott City, Md.

Filed Feb. 17, 1971, Ser. No. 115,972
Int. Cl. A22c 29/00
U.S. Cl. 17—71 16 Claims

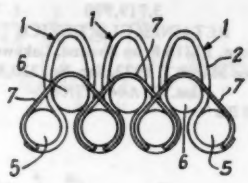


The present machine extracts the meat from the interior body sections of a crab by centrifugal force, that is after crab sections are placed on spinner discs each disc is moved along a line and rotated to discharge the meat into retainers on each disc whereupon the discs are stopped and then positioned for removal of the meat from each disc container by ejection means with each step being automatically carried out by the machine.

3,719,968
FLEXIBLE UNIT ASSEMBLY FOR PROCESSING TEXTILE FIBRES

Jean Frederic Herubel, Guebwiller, France, assignor to N. Schlumberger & Cie, Guebwiller, Haut-Rhin, France

Filed July 2, 1970, Ser. No. 51,913
Claims priority, application France, July 11, 1969, 6923753
Int. Cl. D01h 5/00
U.S. Cl. 19—236 7 Claims

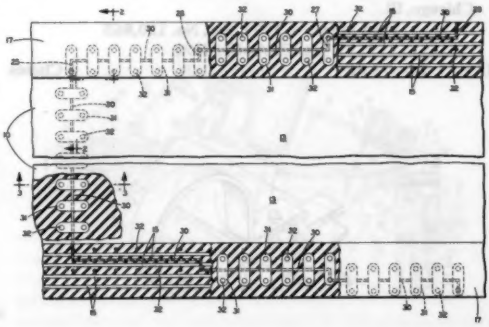


The flexible unit in accordance with the invention is constituted by a strip of flexible sheet formed of natural or synthetic rubber or any suitable elastomer shaped so as to form waves with crests which have a transverse direction with respect to the length of the sheet and to the direction of the relative displacement of said strip with respect to the textile fibres to be processed, the crests of the waves which are located on one of the faces of said waved sheet being secured to suitable supporting means, whilst the crests of the waves which are located on the other face constitute the flexible elements for processing fibres.

3,719,969
BELT SPLICE

Hebert E. McGinnis, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed April 21, 1971, Ser. No. 135,998
Int. Cl. F16g 3/00
U.S. Cl. 24—38 10 Claims



A spliced conveyor belt, and the method of splicing a conveyor belt, of the rubber-covered type provided with transverse and longitudinal reinforcements with the longitudinal reinforcements in the form of cables located only in thickened edges of the belt, characterized in that the rubber cover is removed to expose the reinforcements in the region of the

splice and the adjacent ends to be spliced have the transverse reinforcements of the two ends placed in butting relationship and the adjacent ends of the longitudinal reinforcements in overlapping relationship, the rubber cover is replaced over the exposed reinforcements and shaped to conform with the other areas of the belt. Preferably, the belt ends to be joined have the longitudinal reinforcements cut at staggered locations and the overlapping portions of the said reinforcements are mechanically joined in the region of the splice by a succession of clamps. The transverse reinforcements may also be mechanically joined by a plurality of clamps.

3,719,970

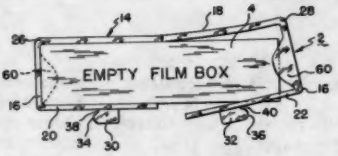
RETAINER CLIP DEVICE

Wilbur E. Carlson, 17316 Fries Avenue, Lakewood, Ohio

Filed March 1, 1972, Ser. No. 230,843

Int. Cl. A44b *21/00*

U.S. Cl. 24—73 PB **10 Claims**



A retainer clip device for detachably mounting a container on a film holder including a strap-like body made from a resilient material having a pair of oppositely disposed side elements and a pair of oppositely disposed end elements made integral with one another with one of the side elements being severed generally between its ends for yieldable swinging movement toward and away from the other side element. The severed side element includes at least one tab-like projection for detachably mounting the clip on a film holder, and one of the end elements includes a flange-like projection for detachable securement to the container for mounting the latter on the film holder.

3,719,971

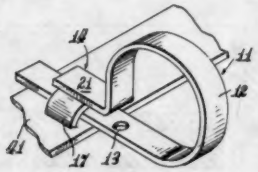
CABLE HANGER AND CLAMP

Frank Lodi, Niles, Ill., assignor to Richco Plastics Company, Chicago, Ill.

Filed March 4, 1971, Ser. No. 120,865

Int. Cl. A44b *21/00*

U.S. Cl. 24—73 PB **6 Claims**



A cable hanger and clamp for securing a bundle of one or more electric, hydraulic, or pneumatic lines or parts, comprising a band of molded plastic insulating material and means for clamping the band around the bundle and retaining the bundle in clamped position and for resiliently mounting the clamped bundle on a selected surface.

3,719,972

SAFETY BELT DEVICE FOR OCCUPANTS OF MOTOR VEHICLES

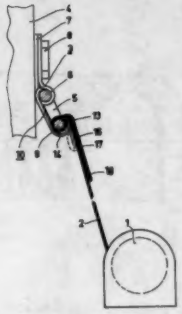
Wolf-Dieter Klink, 7071 Lindach, Danziger 520, Germany

Filed Sept. 21, 1971, Ser. No. 182,323

Claims priority, application Germany, Sept. 28, 1970, P 20 47 706.9

Int. Cl. A44b *11/12*; A62b *35/00*

U.S. Cl. 24—193 **7 Claims**



A safety belt device for an occupant of a motor vehicle equipped with a belt rewinding mechanism supplying a safety belt is disclosed. The device includes a bracket mounted on the vehicle and latching arrangement hinge connected to the bracket for holding the belt at a selected point thereof so as to leave the portion of the belt passing through the latching arrangement accessible to the occupant. The latching arrangement includes an ancillary member movable between closed and open positions, the ancillary member being movable to the open position for releasing the belt by direct manual action on the ancillary member as well as by manually pulling the free portion of the belt.

3,719,973

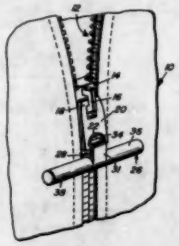
T-BAR ZIPPER TAB HANDLE

Harold Bell, Gloucester, Mass., assignor to Might-Mac, Inc., Gloucester, Mass.

Filed March 3, 1972, Ser. No. 231,506

Int. Cl. A44b *19/26*

U.S. Cl. 24—205.15 H **9 Claims**



A handle for the apertured free end of the pull tab attached to the slider of a slide fastening device. The handle comprises an elongated body having a diametrically reduced midportion centrally intermediate its opposite ends and a rigid strap has one end thereof bent into a loop about the diametrically reduced mid-portion of the elongated member and the other end of the strap is bent into a loop passed through the apertured free end of the slider pull tab.

3,719,974

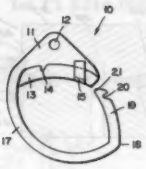
INTEGRAL ONE-PIECE KEY RING OR LOCKING RING

Ralph Abrams, 175 Merry Mount Drive, Warwick, and Harry W. Cary, Jr., 16 Kingsford Avenue, East Providence, both of R.I.

Continuation-in-part of Ser. No. 710,516, March 5, 1968, abandoned. This application March 4, 1971, Ser. No. 121,109

Int. Cl. A44b *13/02*

U.S. Cl. 24—237 1 Claim



The invention comprises a locking ring molded of plastic material. The ring is molded in a single piece which provides a free arm on which the articles, such as keys, can be hung. The body is provided with a groove or passageway into which the free arm can be slipped. A projection on the body enters a notch on the arm to releasably lock the arm in position to hold the keys on the ring. By lifting the arm away from the projection, the arm is released and can be swung into open position. The ring is molded so that the completed item comes from the mold and requires no further assembly operation.

3,719,975

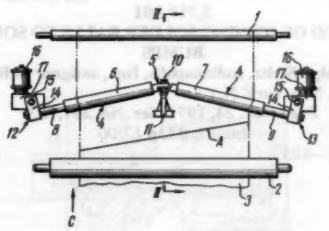
ARRANGEMENT FOR ELIMINATING DISTORTIONS OF WEFT THREADS IN FABRIC

Velizary Semenovich Illarionov, and Vadim Alexeevich Kostin, both of Ivanovo, U.S.S.R., assignors to Ivanovsky Nauchno-Issledovatelsky Experimentalno-Konstruktorsky Mashinostroitelny Institut, Ivanovo, U.S.S.R.

Filed June 11, 1970, Ser. No. 45,352

Int. Cl. D06h *3/12*

U.S. Cl. 26—51.3 2 Claims



An arrangement to eliminate distortions of weft threads in fabric, comprising a roller passed about by the fabric and freely rotating on an axle, which roller and axle consist in their length of at least two parts connected to each other by a hinge, and rest therethrough on a support, while the free outer ends of these parts are hinged in appropriate supports, that are made mutually displaceable in case of distortions, so as to swing the roller and thus change the length of the distance travelled by different sections of one and the same distorted weft thread, thereby eliminating the distortions.

3,719,976

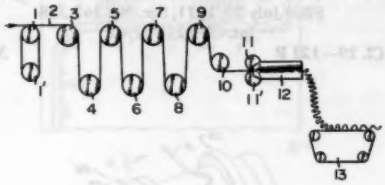
PROCESS FOR PRODUCING CRIMPED POLYESTER FILAMENTS

Nobuharu Izawa; Munetsugu Kikuyama; Hiroshi Toyoshima; Ryuji Yamamoto, and Yasuhiro Murase, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 4, 1971, Ser. No. 140,209

Int. Cl. D02g *1/12*

U.S. Cl. 28—72.14 8 Claims



A process for producing polyester filaments having high Young's modulus and excellent crimps, which comprises heat-treating a bundle of drawn filaments of linear polyester in which at least 85 mole percent of the recurring units consist of ethylene terephthalate, at a temperature of 135° to 240°C. under a tension of at least 0.3 g/denier, feeding the filaments to the nip rollers of a stuffer box while maintaining the filaments at a temperature at least 10°C. lower than the heat-treating temperature and between 100° and 140°C. under a tension of at least 0.1 g/denier, crimping the filaments in the stuffer box, and then with-drawing the filaments from the stuffer box.

3,719,977

AUTOMATIC TOOL CHANGING DEVICE FOR A MACHINE TOOL

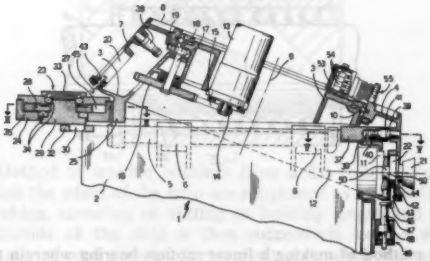
Giuseppe Fantoni, Ivrea, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea, Italy

Filed April 29, 1970, Ser. No. 32,811

Claims priority, application Italy, April 30, 1969, 51649 A/69

Int. Cl. B23f *3/157*

U.S. Cl. 29—26 A 8 Claims



An automatic tool changing device for aligning a selected tool accurately with a headstock spindle. A rotatable drum has a plurality of tool holding positions and a locating rod adjacent to and axially aligned with each of the tool holding positions. An electric motor with an electromagnetic brake rotates the drum to substantially properly align a selected tool. The drum is laterally movable on a support mounted on the headstock

between a first position in which the selected tool is spaced axially from the headstock spindle but substantially aligned therewith, and a second position in which said tool engages the spindle. A tapered aligning opening on the headstock receives the locating pin associated with the selected tool as the drum is moved laterally to rotate the drum slightly, if necessary, to precisely align the tool as it engages the spindle.

3,719,978

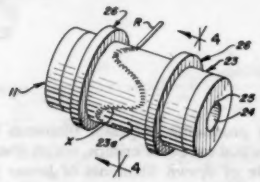
IDLER MEMBER AND METHOD OF ROUGHENING A PORTION OF THE EXTERIOR SURFACE THEREOF

Robert W. Clyne, 5701 North Sheridan Road, Chicago, Ill.

Filed July 29, 1971, Ser. No. 167,358

Int. Cl. B21b *27/02*

U.S. Cl. 29—121 R **3 Claims**



An idler member is provided for use in changing the direction of travel of a moving web. The member has a cylindrical exterior surface which is adapted to be engaged by the moving web. A portion of the said exterior surface has fused thereto material deposits which are adapted to increase the frictional engagement between the idler member and the web.

3,719,979

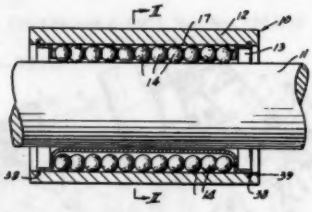
LINEAR MOTION ANTI-FRICTION BEARINGS

Arthur S. Irwin, Bemus Point, N.Y., assignor to TRW Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 71,523, Sept. 11, 1970. This application May 17, 1972, Ser. No. 254,157

Int. Cl. B23p *11/00;* **B21d** *53/12*

U.S. Cl. 29—148.4 A **10 Claims**



A method of making a linear motion bearing wherein the housing is formed with a varying radius inner diameter providing ball loading and ball return portions, the bearing radius continuing axially of the housing, a ball retainer received in the housing, the ball retainer having pathways impressed in an outer surface thereof, the pathways terminating in spaced relation to the axial ends of the retainer and portions of the retainer intermediate the ballways and the axial ends having a varying radius outer surface which mates with the varying radius inner surface of the housing to lock the retainer against rotation in the housing.

3,719,980

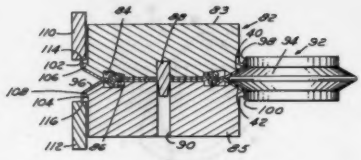
METHOD OF MAKING A PERIPHERALLY GROOVED SHEET METAL ARTICLE

Peter J. Van Bussel, 25501 Glendale Avenue, Detroit, Mich.

Continuation-in-part of Ser. No. 44,943, June 10, 1970, Pat. No. 3,633,431. This application Aug. 31, 1971, Ser. No. 176,582

Int. Cl. B21d *53/26;* **B21k** *1/28, 1/42*

U.S. Cl. 29—159 R **13 Claims**



The invention relates to methods of making or manufacturing peripherally grooved sheet metal articles such as grooved wheels, V-type pulleys, automobile wheel rims, etc. Several embodiments of both the method of manufacture and pulley or wheel construction are disclosed. Basically, all of the embodiments have in common the use of the pair of sheet metal discs as the starting blanks for manufacturing a single peripherally grooved article. The discs are progressively formed into a final pulley in three stages. In the first stage, the metal discs are formed into nesting blanks forming an intermediate pre-clinched blank assembly shaped to facilitate the second step which involves acting upon the first assembly in a die to form an intermediate clinched blank assembly in which the discs are held together by an annular clinched portion. In the third step, the clinched blank assembly is acted upon to spread apart the outer rim sections to form a peripherally grooved sheet metal article. A multi-pulley or wheel construction is disclosed in which a plurality of the single pulleys or grooved sheet metal articles are clinched together to form a multi-pulley or wheel construction having several V-grooves. One preferred form of the clinched portion comprises mutually intertwining generally S-shaped, in cross-section, sections of each disc, end portions of the S-shaped sections being folded back upon the S-shape.

3,719,981

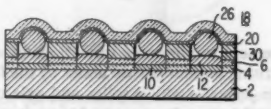
METHOD OF JOINING SOLDER BALLS TO SOLDER BUMPS

Richard Ralph Steitz, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,783

Int. Cl. B23p *17/00*

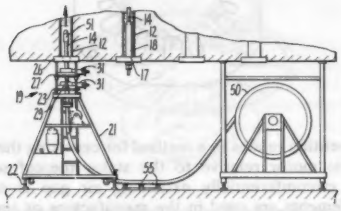
U.S. Cl. 29—423 **6 Claims**



A semiconductor wafer is provided with a plurality of semiconductor device flip chips in regular array, each of the devices having a plurality of solder bumps regularly spaced a certain distance apart. An array of solder balls is formed on

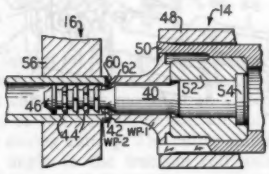
the tacky surface of a piece of pressure-sensitive tape, the balls being spaced like the solder bumps. The array of solder balls is placed in contact with the array of solder bumps both of which are then heated to reflow the solder and then cooled to fix the contact. The tape is then removed.

3,719,982
METHOD OF THREADING A TENDON THROUGH A SHEATH
Ian Tindal, San Francisco, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.
Filed Feb. 13, 1970, Ser. No. 11,100
Int. Cl. B21d *39/00*
U.S. Cl. 29—452 **3 Claims**



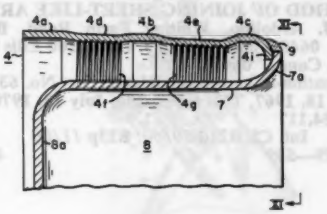
A novel jacking system and method are provided for moving a cable through a sheath which includes opposite vertical portions connected by an intermediate arcuate portion. The cable is relatively heavy, being made up of the order of some 170 to 200 strands of high carbon steel wire, each approximately of the order of one-quarter inch in diameter. The total length of the cable is of the order of 500 feet while its weight is some 7½ to 10 tons.

3,719,983
INTERNAL FLASH REMOVAL METHOD
Wilmer E. Funk, Roanoke, and Ira H. Sage, Peoria, Ill., assignors to Production Technology Inc., Peoria, Ill.
Original application Sept. 23, 1968, Ser. No. 761,763. Divided and this application Jan. 22, 1970, Ser. No. 10,678
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **2 Claims**



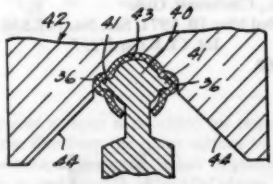
An internal flash removal broach tool is provided for use with a friction welding machine to remove the internal flash produced at the weld interface of an assembly comprised of two tubular members. The tool is provided with a plurality of cutting edges which produce segmental rather than circular cuttings and the blades progressively increase in diameter to assure removal of substantially all of the flash material.

3,719,984
MAKING AN ARCTIC THREAD PROTECTOR
Henry Frishof, Dubois, Pa., assignor to Alco Standard Corporation, Valley Forge, Pa.
Filed Dec. 22, 1971, Ser. No. 210,825
Int. Cl. B23k *31/02*
U.S. Cl. 29—482 **11 Claims**



A metal sleeve or collarlike protector for end portions of pipe members has been provided having a fully closed-off forward wall construction. The procedure involves a separate deep-draw forming and shaping of an outer threaded mounting part and of an inner closing-off cup-like part. The two parts are held in an aligned relation with their forward convexly curved rim flanges in engagement and with their side skirt walls in a radially spaced relation, while a continuous weld bead is applied to the joint at the flanges to provide a unitary dual wall unit. The protector unit is only open at its back end to receive and seal-off the open end of a pipe or casing member.

3,719,985
METHOD OF MAKING BUSHINGS
George M. Federspill, Kokomo, Ind., assignor to Steel Parts Corporation, Tipton, Ind.
Filed Aug. 13, 1971, Ser. No. 171,496
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **5 Claims**



Method of making bushings from a flat rolled strip in which the edges of the strip are roughened as by knurling, notching, serrating or slitting to bushing length and the underside of the strip is then successively coined with equally spaced parallel transversely extending V-shaped grooves at intervals corresponding to the length of the completed blanks. The strip is then severed to length along the coined grooves and formed over a die to an undulating form, having a central section formed about the internal diameter of the finished bushing, and end sections spaced on opposite sides of the central section and formed about radii of the same length as the internal radius of the finished bushing. Intermediate sections are formed between the central and end sections about equal radii and upstanding relative to the end and central sections. A second

die partially closes the undulating strip about a mandrel. A third set of cooperating dies closes the bushing about a second mandrel and partially depresses the intermediate sections to the form of diametrically opposed lobes. The fourth set of dies is in the form of coining dies and completely closes the bushing to size about a mandrel and completes the form of the diametrically opposed lobes.

3,719,986

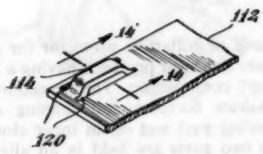
METHOD OF JOINING SHEET-LIKE AREAS

Edward J. Ardolino, Whiting Farm Road, Branford, Conn. 06405, and Edward J. Okay, 200 Ellis St., New Britain, Conn. 06051

Continuation-in-part of application Ser. No. 631,832, Apr. 18, 1967. This application July 13, 1970, Ser. No. 54,117

Int. Cl. B21d *39/00*; B23p *11/00*

U.S. Cl. 29—509 **4 Claims**



A first sheet area has an elongated opening pierced therein and a second sheet area has a companion arch like portion displaced therefrom of such dimensions that when the two sheets are superimposed on each other the arch portion fits into the elongated opening. Then while in this superimposed position a pair of opposite edges of the elongated opening are displaced toward each other to be engaged by the bottom of the arch when the arch is flattened out to engage the top surfaces of the displaced edges in locking engagement.

3,719,987

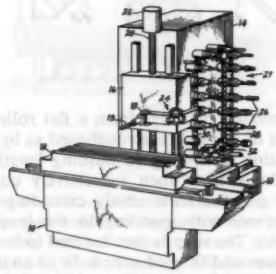
TOOL CHANGE APPARATUS

William B. Seidel, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 10, 1971, Ser. No. 141,536

Int. Cl. B23q *3/157*

U.S. Cl. 29—568 **1 Claim**



An apparatus for synchronizing movements of a tool storage belt or chain with the movements of the spindle carrier of a machine tool so as to permit a tool change to be effected in all positions of the spindle carrier.

3,719,988

METHOD OF CENTERING THE ROTOR OF AN ELECTRIC MOTOR IN ITS STATOR

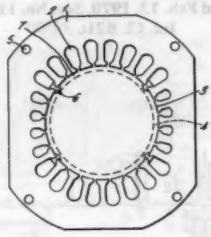
Borge Niels Jorgen Nielsen, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jan. 4, 1971, Ser. No. 103,608

Claims priority, application Germany, Jan. 13, 1970, P 20 01 179.4

Int. Cl. H02k *15/00, 15/14, 15/16*

U.S. Cl. 29—596 **9 Claims**



The invention relates to a method for centering the rotor of an electric motor relative to the stator thereof so that a uniform, circumferentially extending air gap is achieved. Spacer elements are used in the manufacture or repair of a motor which are inserted into some of the winding grooves of the stator, these elements each having a head which projects beyond the groove to an extent equal to the width of the air gap. The elements are made of a heat shrinkable material and heat generated by motor current causes the heads to be withdrawn into the grooves as a result of the shrinkage of the material.

3,719,989

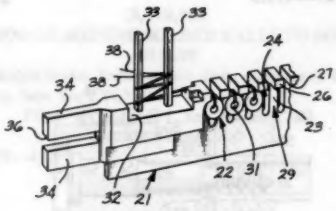
METHOD OF ASSEMBLING AND SECURING ARTICLES WITH A SUPPORT

Joseph W. Fagerstrom, Johnstown, and Frederick E. Robbins, Reynoldsburg, both of Ohio, assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,672

Int. Cl. H01f *7/06*

U.S. Cl. 29—604 **13 Claims**



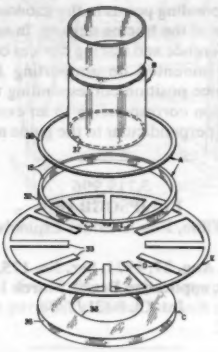
A plurality of stacked magnetic cores have a pair of wires threaded through axially aligned openings of the cores. The free ends of the wires are secured to a comb-like, plastic support stick which is formed with a plurality of nests for receiving and supporting individual cores. The cores are fed successively into the nests of the support stick. As the stick is rocked about its longitudinal axis and also indexed longitudinally, the wires are fed through and between successive slots in the stick adjacent to the nests so that each core is supported on the stick and wired thereby. During the wiring of the cores with the stick, each core is clamped within its nest until the wires secure the core with the stick.

3,719,990

VACUUM TIGHT LEAD THROUGHS FOR DEWAR MOUNTED INFRARED DETECTORS

Jasper J. Long, Healdsburg, and Ben Justus, Petaluma, Calif., assignors to Optoelectronics, Inc., San Rafael, Calif.

Filed Nov. 23, 1970, Ser. No. 91,648
Int. Cl. H01j 9/18; H01r 43/00
U.S. Cl. 29—628 **8 Claims**



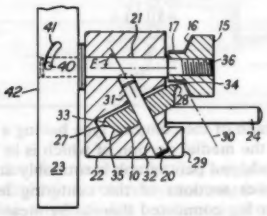
An improved construction and process for constructing vacuum tight lead throughs is disclosed for use with Dewar mounted multi-element infrared detectors.

3,719,991

CAN OPENERS

Michael Robert French, St. Albans, England, assignor to The Metal Box Company Limited, London, England

Filed June 23, 1971, Ser. No. 155,998
Claims priority, application Great Britain, June 24, 1970, 30,610/70
Int. Cl. B67b 7/34
U.S. Cl. 30—15.5 **3 Claims**



A can opener of the type in which a rotatable cutter cuts through the seaming wall of a double end seam of a can, the cutter being mounted on a spindle in a housing which also carries a rotatable traction roll to run along the can seam during cutting. The cutter spindle is mounted at an acute angle to the traction roll axis, such that the cutter axis is parallel to a face of the traction roll that engages the chuck or rear wall of the can seam.

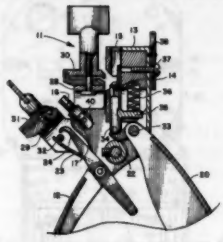
3,719,992

HAND OPERATED KEY CUTTER

Sam Reisner, San Fernando, Calif., assignor to Kar Products, Inc., Des Plaines, Ill.

Filed July 19, 1971, Ser. No. 163,967
Int. Cl. B26b 13/22
U.S. Cl. 30—131 **4 Claims**

The key cutter includes a first handle terminating in a housing removably supporting a cutter assembly. A mounting means supports a stylus for rotation about its own axis to the handle at a given spacing from the cutter assembly. A second handle is pivoted to the first handle for operating the cutter assembly. The structure is completed by a key carriage in the form of a yoke holding blank and master keys in positions juxtaposed, respectively, the cutter assembly and stylus. The



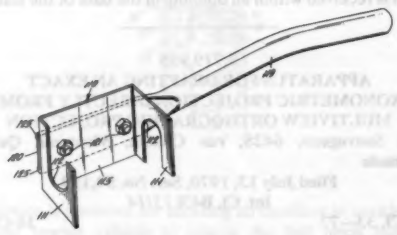
mounting of the key carriage to the first handle is such that it can effect in and out or rocking movements and transverse movements so that the stylus follows indentations in the master key and similar indentations can be cut by the cutter assembly in the blank key. A spring biases the master key against the stylus to facilitate the duplicating operation.

3,719,993

SCRAPING APPARATUS

Daniel P. Caprioli, P.O. Box 792, Devon, Pa.

Filed April 27, 1971, Ser. No. 137,885
Int. Cl. B08b 9/02; F28g 1/08
U.S. Cl. 30—172 **8 Claims**



An improved scraper is provided for removing paint, rust, scale and the like from the outer surface of elongated workpieces. The scraper comprises a pair of planar blade elements disposed in spaced relation in parallel planes transverse to the longitudinal axis of the workpiece and secured together by means of a scraper. Each blade has an edge shaped to engage substantially one-half of the periphery of the workpiece, with the edges engaging opposite sides of the workpiece for simultaneously scraping its entire surface. A handle is fastened to the spacer for applying leverage to the blade elements and for reciprocating the blade elements longitudinally of the workpiece thereby to effect the desired scraping action.

3,719,994

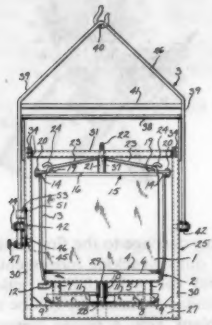
APPARATUS FOR DRAINING WHEY FROM CHEESE

Otis O. Hensel, P. O. Box 185, Hustisford, Wi.

Filed April 2, 1971, Ser. No. 130,669
Int. Cl. A01j 25/11
U.S. Cl. 31—46 **10 Claims**

An apparatus for pressing and draining whey from cheese curd. The cheese curd to be treated is contained within a box or container having a generally rectangular cross-section and

an open top. The box is mounted within a supporting frame and a perforated lid is connected to the side portions of the frame structure and encloses the open top of the box. The frame containing the box is lifted into a supporting cradle that is adapted to travel on an overhead rail extending within the cheese making plant. The cradle includes an outer cradle member suspended from the rail and an inner cradle member which supports the frame and box. The inner cradle member is pivotally connected to the outer member about a horizontal



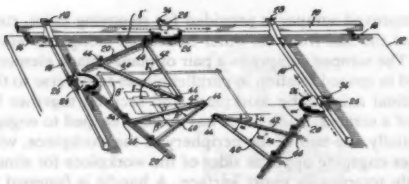
axis so that the box can be tilted to a downwardly inclined position to permit the whey to drain from the cheese curd through the perforated lid. A locking mechanism is included to lock the box in the upright, as well as in the downwardly inclined position. To permit the box to be rotated about its longitudinal axis, an axial pin connected to the lid is journalled within a cross bar on the inner cradle member and the base of the inner cradle member is provided with an upstanding pin which is received within an opening in the base of the frame.

3,719,995

APPARATUS FOR DRAFTING AN EXACT AXONOMETRIC PROJECTION DIRECTLY FROM A MULTIVIEW ORTHOGRAPHIC PROJECTION

Marc Sauvageau, 6428, rue Chabot, Montreal, Quebec, Canada

Filed July 13, 1970, Ser. No. 54,159
Int. Cl. B43l *13/14*
U.S. Cl. 33—77 **10 Claims**



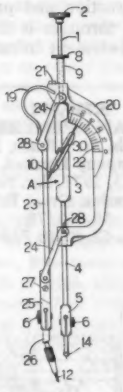
An apparatus mounted on a drafting board for drafting an exact axonometric projection of an object directly from a multiview orthographic projection of such object. The apparatus includes at least two reference devices placed on the drafting board each adapted to be positioned along a running line extending from corresponding points of at least two views placed in their normal orientation in orthographic projection of such object and oriented at a predetermined angle from a reference in the direction of sight, and a tracing device associated with each reference device and defining an axonometric line oriented at an angle from such reference depending upon the desired angles of the axonometric projection. The intersection the axonometric lines derived from said two views in orthographic projection defines one point of the axonometric projection. There is also provided a guide member also placed on the drafting board and positioned along a directrix line perpendicular to the bisectrix of the angle formed by each reference and tracing devices for guiding the reference and tracing devices whereby movement of each reference device to positions corresponding to other corresponding points of such object in the multiview orthographic projection will define the corresponding points in the axonometric projection at the intersection of the tracing devices. In an alternative embodiment, the reference and tracing devices could be the same device pivotably mounted on supporting arm to oscillate between a reference position corresponding to a running line to a tracing position corresponding to an exometric line. The supporting arm is perpendicular to the guide member.

3,719,996

ELLIPSOGRAPH

Sertorio Arruda Filho, Rua Aristides Espinola, 37/301, Rio de Janeiro, Brazil

Filed Aug. 27, 1971, Ser. No. 175,436
Claims priority, application Brazil, March 15, 1971, 1634
Int. Cl. B43l *11/04*
U.S. Cl. 33—30 C **5 Claims**



An ellipsograph of the compass type having a multi-section centering leg, the medial portion of which is in the form of a crank. A bow-shaped pantograph is rotatably attached to the upper and lower sections of the centering leg and has a straight scriber leg connected thereto by means of a pair of pivoted links. A spring mounted on the upper portion of the pantograph urges the scriber leg against the peripheral edge of a circular modulus disc which is pivotally mounted on the medial portion of the centering leg opposite a scale on the pantograph.

3,719,997

AUTOMATIC LINE-UP TABLE

Claude K. Hulen, 1524 Charlotte, Kansas City, Mo.

Filed Aug. 20, 1970, Ser. No. 65,480
Int. Cl. B43l *5/00*
U.S. Cl. 33—80 **5 Claims**

An automatic line-up table structure having a rectangular table top and a straight edge member which is operable thereover. The straight edge member has guide members operable in ways adjacent opposite side edges of said table top and the straight edge member has members operatively connected to moving members at said opposite side edges operable by an impulse stepping motor whereby activation of the

motor moves the straight edge member. Controls for said motor include a micrometer indexing unit and circuitry therefor whereby the straight edge member is selectively moved in selected directions and in predetermined increments between accurate parallel positions for each impulse imparted to the motor.

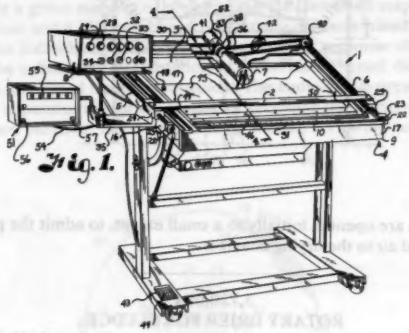
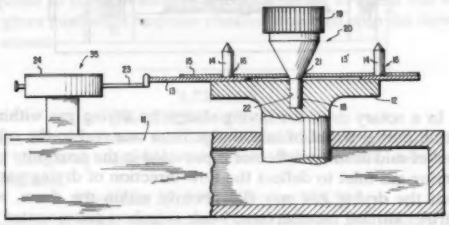


Fig. 1.

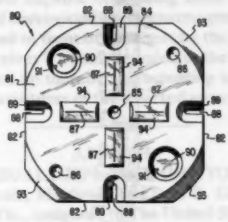
3,719,998
TARGET EVALUATION
Heinz Krausser and Alfred Krausser, Munich, Germany, assignors to Carl Edelmann G.m.b.H., Heidenheim (Brenz), Germany
Filed Feb. 27, 1970, Ser. No. 15,079
Claims priority, application Germany, Feb. 28, 1969, P 19 10 345.8
Int. Cl. G01b *5/14*
U.S. Cl. 33—174 R **4 Claims**



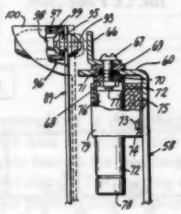
Apparatus for the exact evaluation of hits on a shooting target including a rotatably mounted holding plate for an annular support disc concentrically holding the target. A plug, which can be inserted into the shot hole, is mounted in a central bore of the holding plate and forms the axis of rotation of the support disc and the target. A measuring device is provided whose sensor contacts the circumference of the support disc to show the eccentricity of the shot hole. Also a method of and apparatus for printing targets and punching positioning holes simultaneously.

3,719,999
DRAFTING TOOL
Winston F. Harrington, 9808 Amanita Ave., Tujunga, Calif. 91042
Continuation-in-part of application Ser. No. 2,835, Jan. 14, 1970. This application Jan. 20, 1971, Ser. No. 107,889
Int. Cl. B43l *7/00*
U.S. Cl. 33—27 B **5 Claims**

A drafting tool comprising a substantially transparent body member adapted to engage a drafting surface and having a recess thereon for engaging the point of a drafting instrument, cross hairs for locating center points and magnifying means for magnifying an area under the body member. The tool may be temporarily held in place by an adhesive material or, alternatively, vacuum-forming means on the bottom thereof. One embodiment incorporates a removable center plug to permit different types of center plugs to be used.



3,720,000
TRAILER HITCH GUIDE ASSEMBLY
Fred Schlegel, Rural Route No. 1, Box 152(a), Ceresco, Mich.
Filed July 31, 1970, Ser. No. 60,067
Int. Cl. G01c *5/00*
U.S. Cl. 33—264 **7 Claims**



A device is provided for assisting an operator in backing up a trailer towing vehicle to couple the ball hitch member mounted on the rear of the vehicle with the complementary socket hitch member mounted on the tongue of the trailer. The device comprises a guide having sighting means such as a ball at the end thereof adapted to be mounted on the towing vehicle and a second guide having target means at the end thereof adapted to be mounted on the tongue of the trailer. When both guides of the device are properly mounted and adjusted, the operator backs the towing vehicle toward the trailer while aiming the sighting ball at the target means. When the sighting ball engages the center of the target means, as indicated by a signal such as the lighting of an electric light bulb or the sound of a buzzer, the vehicle and the trailer are in proper alignment for coupling.

3,720,001
PLUMB BOB WITH INTERCHANGEABLE PARTS
Mieczyslaw Stanislaw Majewski, 102 East 7th Street, New York, N.Y.
Filed May 4, 1970, Ser. No. 34,255. The portion of the term of this patent subsequent to June 10, 1986, has been disclaimed.
Int. Cl. G01c *15/10*
U.S. Cl. 33—392 **2 Claims**

A plumb bob assembly includes a hollow conical bob having a conical recess in which is a removable heavy conical insert.

The insert has a conical recess in which is a removable conical bob. One or more cylindrical sections are connected successively to the conical bob by detachably engaged threaded nipples and recesses. One or more of the cylindrical members may have conical recesses containing removable other conical bobs. The bobs are of different sizes and different materials.

3,720,002

DRYING SHEET MATERIAL

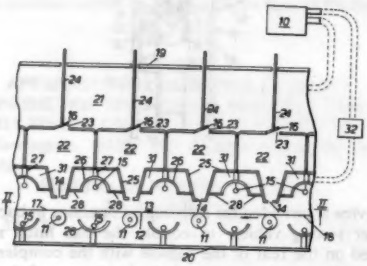
Patrick Douglas Martin, High Wycombe, England, assignor to Wiggins Teape Research & Development Limited, London, England

Filed March 3, 1971, Ser. No. 120,507

Claims priority, application Great Britain, March 19, 1970, 13,377/70

Int. Cl. F26b *7/00*

U.S. Cl. 34—18 **12 Claims**



Sheet material to be dried is conveyed through a drying region where a combination of radiant heat and heated gas is directed towards the material. The proportion of radiant heat relative to the amount of heated gas is adjusted through the drying region so that a higher radiant heat/heated gas ratio is provided at the end of the path than at the beginning of the path.

3,720,003

METHOD AND APPARATUS FOR THE DRYING OF GREEN CERAMIC AND OTHER MATERIALS

Erich Huthmann, Laggenbeck, Germany, assignor to Keller Ofenbau GmbH, Laggenbeck, Germany

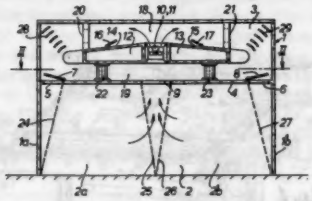
Filed Feb. 10, 1971, Ser. No. 114,245

Claims priority, application Germany, Feb. 11, 1970, P 20 06 043.9

Int. Cl. F26b *21/06*

U.S. Cl. 34—72 **1 Claim**

Apparatus for drying green ceramic articles such as high-voltage insulators, includes a drying chamber and an adjacent chamber in which drying air is pre-treated to give a required temperature and humidity. Once the latter has been achieved



valves are opened, initially to a small extent, to admit the pre-treated air to the drying chamber.

3,720,004

ROTARY DRIER FOR SLUDGE

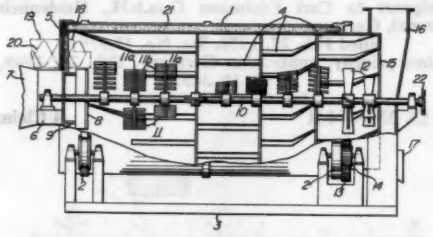
Daiji Okawara, Shizuoka, Japan, assignor to Kabushiki Kaisha Okawara Seisakusho, Kando, Yoshdacho, Haibara-gun, Shizuoka-ken, Japan

Filed Nov. 30, 1971, Ser. No. 203,264

Claims priority, application Japan, Oct. 15, 1971, 46/81503

Int. Cl. F23b *1/32;* **F23g** *5/06*

U.S. Cl. 34—130 **4 Claims**



In a rotary drier for drying sludge by drying gas within a drum during travel of said sludge from one end to the other end of said drum, a deflector is provided in the proximity of a drying gas inlet to deflect the flow direction of drying gas so that the drying gas may flow evenly within the drum, and further stirring members and blade members are mounted on a rotary shaft extending through the drum so that the sludge charged into the drum may be broken and stirred and the drying gas may be caused to swirl to form turbulent flows by said stirring members and the velocity of the drying gas flowing toward an outlet of the drum may be lowered and the concentration of the sludge particles residing in the drum may be increased by said blade members.

3,720,005

AUDIO-VISUAL SYSTEM

John L. Roche, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

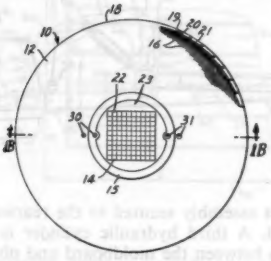
Filed Feb. 12, 1971, Ser. No. 114,834

Int. Cl. G09b *3/06*

U.S. Cl. 35—8 A **26 Claims**

An audio-visual system for presenting correlated audio and visual information comprising a thin audio-visual record medium and an audio-visual presentation apparatus. The audio-visual record medium comprises an audio record including in a predetermined sequence a plurality of sound tracks containing recorded audio information, with each sound track having a beginning at a given position near the periphery of the audio record and with the sound track beginnings distributed at predetermined intervals; and a visual record including a plu-

rality of spaced visual display areas containing projectable visual information correlated with the information recorded in the sound tracks, which visual display areas are positioned in a predetermined sequence corresponding to the predetermined sequence of sound tracks. The visual display areas further include a given number of projectable predetermined response choices and a like number of projectable predetermined programs individually relating a predetermined response choice to the subsequent presentation of a correlated visual display area and sound track combination. The audio-visual presentation apparatus comprises means for receiving the audio-visual record medium, audio reproducing means, a viewing screen,



projection means, and positioning means for relatively positioning the audio reproducing means and the audio record for enabling the audio reproducing means to engage the beginning of any of the sound tracks and for relatively positioning the projection means and the visual record for enabling projection onto the viewing screen of an image of visual information from any of the visual display areas. The positioning means are controlled by control means in accordance with a projectable predetermined program sensed in response to the operation of selection means to select one of the given number of response choices projected onto the viewing screen.

3,720,006

TEACHING APPARATUS

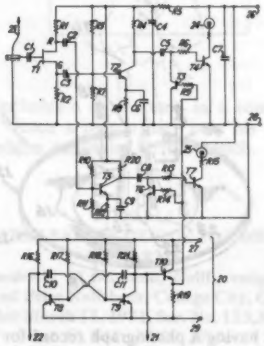
Frank Boram, Esher, and Denis Harold Kail, Banstead, both of England, assignors to Gerald Barry Stillit, London, England

Filed Jan. 19, 1971, Ser. No. 107,715

Claims priority, application Great Britain, Jan. 28, 1970, 4,113/70

Int. Cl. G09b *7/06*

U.S. Cl. 35—9 C **5 Claims**



A teaching apparatus comprising a printed sheet carrying questions and for each question a number of demarked areas denoting different answers, a platen locatable behind the sheet and bearing a plurality of separate electrically conductive areas registrable with the sheet demarked areas, a probe in circuit with the conductive areas and connectable to an electric energy source, and a multivibrator for applying to the conductive areas at will periodically time-varying signals separable to a receiver T1 and capable of causing from the conductive areas radiation of corresponding electromagnetic waves capable of being sensed in front of the sheet by the probe touching the sheet, the receiver T1 being coupled to the probe to identify the wave picked up thereby and actuating indicating means indicating the correctness of the selected answer.

3,720,007

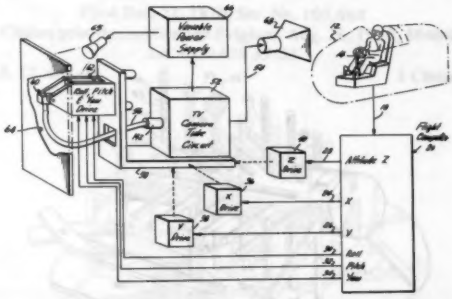
VISUAL DISPLAY SIMULATOR

John C. McKechnie, Maitland, and Paul D. Grimmer, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 4, 1971, Ser. No. 103,462

Int. Cl. G09b *9/08;* **B64g** *7/00*

U.S. Cl. 35—12 N **3 Claims**



A visual display simulator is described wherein a scene is viewed by a pinhole lens element which casts images of the scene on a fiber-optic bundle for transmittal to a T.V. camera tube unit of a closed circuit T.V. having a display unit viewable by a trainee. The pinhole lens element is positionable by a roll, pitch, and yaw drive means about three orthogonal axes intersecting at the pinhole, and is also positionable in translation by other drive means.

3,720,008

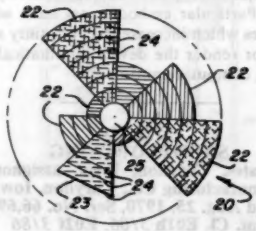
COMPACT DEVICE FOR THE MULTIDIMENSIONAL PRESENTATION OF QUALITATIVE AND QUANTITATIVE DATA

Laddie F. Hutar, 3800 Lake Shore Drive, Chicago, Ill.

Filed Nov. 22, 1971, Ser. No. 200,997

Int. Cl. G09b *19/18*

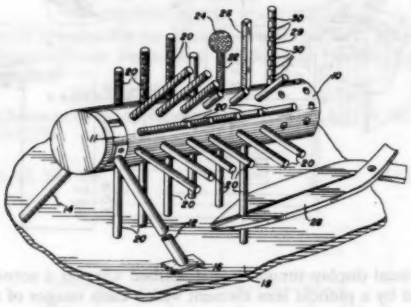
U.S. Cl. 35—24 R **10 Claims**



To cope with the "explosion" of qualitative and quantitative information available today and to present it in a comprehen-

sive and usable form for a plurality of time periods, a compact multidimensional device is provided comprising a plurality of multisegmentable discs and means for assembling said discs coaxially in juxtaposed parallel relationship. The segments of each disc are distinguishable appearance-wise from each other, such as by a color coding, so as to qualitatively distinguish data. The pattern of visually distinguishable appearance is common to all the discs with like segments of successive discs being in longitudinal axial alignment, whereby each disc may represent a finite time period. The radial size of each segment is adjustable so as to be quantitatively correlatable with the data. Particular embodiments have additional elements or features which increase the versatility and data handling capacity of the device.

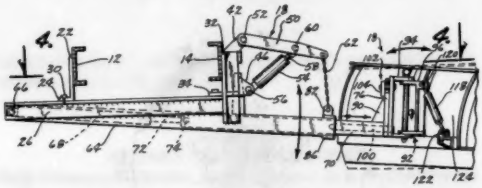
3,720,009
DEVICE FOR THE MULTIDIMENSIONAL PRESENTATION OF QUALITATIVE AND QUANTITATIVE DATA
Laddie F. Hutar, 3800 Lake Shore Drive, Chicago, Ill.
Filed Nov. 22, 1971, Ser. No. 201,073
Int. Cl. G09b *19/18*
U.S. Cl. 35—24 R **22 Claims**



To cope with the "explosion" of qualitative and quantitative information available today and to present it in a comprehensive and usable form for a plurality of time periods, a multidimensional device is provided comprising an elongated hub means; a support means for rotatably mounting the hub means; and a multiplicity of projections supported by said hub means. The projections are arranged in a plurality of juxtaposed parallel planes along the hub means. The projections in each plane are distinguishable appearance-wise from each other, such as by a color coding, so as to qualitatively distinguish data. The pattern of distinguishable appearance is common to all the planes with like projections in successive parallel planes being in longitudinal alignment, whereby each plane may represent a finite time period. The length of each of the projections is adjustable so as to be quantitatively correlatable with the data. Particular embodiments have additional elements or features which increase the versatility and data handling capacity or render the device automatically adjustable by, for example, computer control.

3,720,010
SNOWPLOW WING
Frank D. Coates, Corydon, Iowa, assignor to Coates Manufacturing Co., Corydon, Iowa
Filed Aug. 25, 1970, Ser. No. 66,691
Int. Cl. E01h *5/06;* **E02f** *3/86*
U.S. Cl. 37—42 R **6 Claims**

A snowplow wing for use on a truck which may be moved from a non-operative position adjacent the truck to an operative position laterally of the truck. A first support means is secured to the truck frame rearwardly of the cab and has the inner end of a first tube pivotally secured thereto. A second tube is slidably mounted in the outer end of the first tube by means of a first hydraulic cylinder mounted in the first tube. A second hydraulic cylinder is connected to the outer end of the first tube for pivotally raising and lowering the outer end of the tubes. A mounting bracket is secured to the outer end of the second tube and is adapted to be detachably connected to

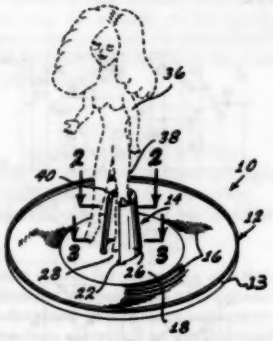


a pivot bracket assembly secured to the rearward side of the moldboard. A third hydraulic cylinder is connected to and extends between the moldboard and pivot bracket assembly for pivotally moving the moldboard about a horizontal axis intermediate the length thereof. A stabilizer rod extends between the moldboard and first tube which causes the moldboard to be pivoted about a vertical axis as the first hydraulic cylinder is operated. The moldboard automatically folds or moves to a position adjacent the truck as the first hydraulic cylinder slidably moves the second tube into the first tube.

ERRATUM

For Class 40—104.18 see:
Patent No. 3,720,130

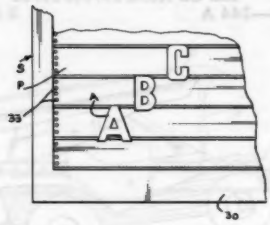
3,720,011
FIGURE TOY STAND AND PHONOGRAPH RECORD COMBINATION
Richard L. May, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 2, 1970, Ser. No. 94,354
Int. Cl. G09f *27/00*
U.S. Cl. 40—28.2 **7 Claims**



A doll stand having a phonograph record for a base and a doll-leg-engaging member connected to the base so that a doll may be mounted on the doll stand and rotated during playing of the record on a phonograph turntable. The doll-leg-engag-

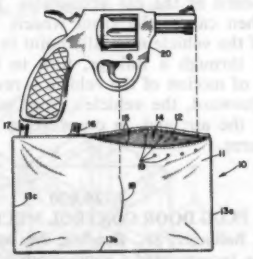
ing member may be connected to either side of the record so that both sides may be played with the doll in position thereon.

3,720,012
SIGNBOARD CONSTRUCTION
Robert J. Loper, Pasadena, Tex., assignor to Trail-R-Signs, Pasadena, Tex.
Filed Oct. 1, 1970, Ser. No. 77,054
Int. Cl. G09f 7/02
U.S. Cl. 40—140 2 Claims



The specification discloses a signboard construction comprising a plurality of longitudinally extending, interlocking face pieces adapted to be secured to a supporting frame with means formed on the opposite edges of such interlocking pieces forming longitudinally extending rails adjacent to the opposite edges of such interlocking pieces for supporting a plurality of letters or figures on such signboard.

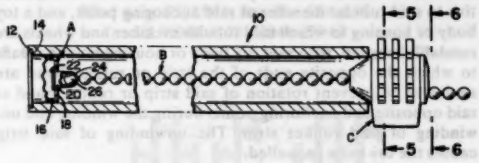
3,720,013
HANDGUN CONCEALING POUCH
Hugh C. McDonald, Santa Monica, Calif. (8200 Redlands St., 308, Playa del Rey, Calif. 90291)
Filed Apr. 23, 1971, Ser. No. 136,954
Int. Cl. F41c 9/00, 27/00
U.S. Cl. 42—1 R 6 Claims



A pouch includes a slit formed in a central side portion through which a person may pass his trigger finger to fire a handgun concealed in the pouch.

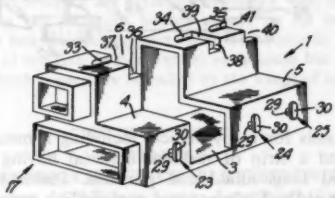
3,720,014
REMOVABLE SAFETY DEVICE FOR DISABLING FIREARMS
Robert S. Goodrich, El Sequndo, Calif., assignor to James Kalfsbeck and Peter Kalfsbeck, College City, Calif.
Filed March 11, 1971, Ser. No. 123,345
Int. Cl. F41c 27/00, 27/08
U.S. Cl. 42—1 N 6 Claims

A universal safety device for preventing the loading of firearms, including a plug adapted to be secured to a bead chain and in frictional engagement with the chamber of the firearm, a bead chain for insertion through the barrel of the



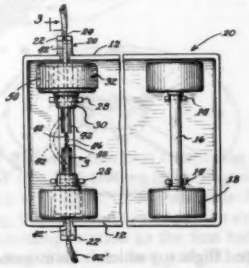
firearm and having a length in excess of the length thereof and a locking mechanism for engaging the bead chain at a location wherein the mechanism will block the end of the barrel.

3,720,015
COMBINED BOX AND CONSTRUCTION ELEMENT WITH CONNECTING MEANS CONNECTABLE FROM TWO DIRECTIONS
Germaine Van der Veken, Vryheidslaan 171, Brussels, Belgium
Filed Dec. 22, 1970, Ser. No. 100,664
Claims priority, application Belgium, Aug. 26, 1970, 50404
Int. Cl. A63h 33/08
U.S. Cl. 46—11 3 Claims



The invention pertains to a novel packing element which, after its primary use, can be combined with similar elements, to form a toy construction set.

3,720,016
TOY HAVING SLOTTED AXLE AND ELASTIC STRIP DRIVE MEANS LATERALLY INSERTABLE THERETHROUGH
Sam Kupperman, and Dennis I. Kupperman, both of 4319 Main St., Skokie, Ill.
Filed Aug. 18, 1971, Ser. No. 172,840
Int. Cl. A63h 17/00
U.S. Cl. 46—206 6 Claims



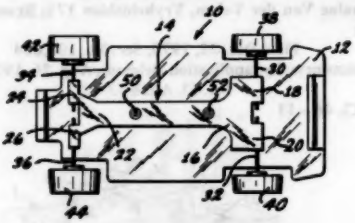
A power unit for operating a toy or the like which comprises a pair of wheels supported on a longitudinally slotted tubular

member, with the wheels fixedly secured to the tubular member to rotate therewith, an elastic strip or rubber band extending through said tubular member and being anchored inside said tubular member to prevent rotation of said strip relative to said tubular member at said anchoring point, and a toy body or housing to which said tubular member and wheels are rotatably secured, with said toy body or housing having means to which the opposite ends of the strip or rubber band are anchored to prevent rotation of said strip or rubber band at said opposite end anchoring points during the winding and unwinding of said rubber strip. The unwinding of said strip causes the toy to be propelled.

3,720,017
CHASSIS FOR A MINIATURE TOY VEHICLE

Levati Ersilio, Vimercate, Italy, assignor to Mattel, S.p.A., Milan, Italy

Filed Feb. 3, 1971, Ser. No. 112,196
Claims priority, application Italy, Feb. 3, 1970, 20,160/70, 20,719/70
Int. Cl. A63h *17/26*
U.S. Cl. 46—221 3 Claims

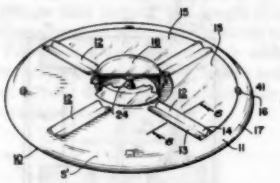


A chassis for a toy vehicle including a metal support plate and a strip of resilient material having generally U-shaped longitudinal end portions. Embedded within each leg of the U-shaped end portions is a separate small diameter wire axle which in turn is connected to a wheel to provide a freely rotatable wheel system so as to minimize friction upon moving to provide a flexible suspension to insure against breakage of the small diameter wire axles and to further realistically simulate an independent four wheel suspension found in full-size vehicles.

3,720,018
LIGHTED DISK-TYPE FLIGHT TOY AND COMPONENTS THEREOF

Harry L. Peterson, 504 North Second East, Bountiful, and Alfred L. Fellows, 2457 Wilson Avenue, Salt Lake City, both of Utah

Filed March 25, 1971, Ser. No. 127,885
Int. Cl. A63h *33/26*
U.S. Cl. 46—228 2 Claims

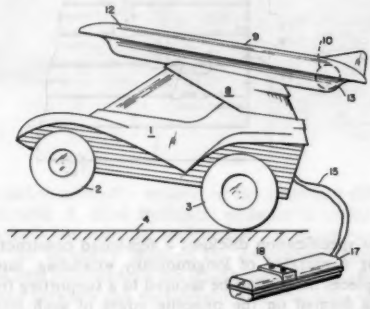


A disk shaped flight toy which is illuminated for night flying. An included dome, with the rest of the toy, simulates artists' conceptions of flying saucers. The dome encases suitable light means that can be selectively activated so that the object can be illuminated as desired for night flying, retrieval, and so forth. Rays from the central light object of the toy are deflected outwardly and radially so illuminate either the material of the toy itself, internally, or to reflect light from one or both opposite surfaces thereof.

3,720,019
REMOTE CONTROLLED BUCKING TOY VEHICLE

Peter J. Waznys, Richmond Hill, and Philip D. Bart, Monsey, N.Y., assignors to Remco Industries, Inc., Harrison, N.J.

Continuation of application Ser. No. 882,111, Dec. 4, 1969. This application Dec. 10, 1971, Ser. No. 206,786
Int. Cl. A63h *29/08, 29/22*
U.S. Cl. 46—244 A 8 Claims

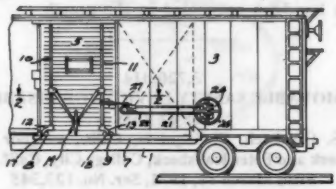


A toy vehicle is provided capable of bucking and turning motions, having a gyrating effect, controlled by a simple remote reversing switch, the vehicle itself being designed to resemble a dune buggy with a surfboard on top. The vehicle includes means for temporarily shifting the center of gravity to a position behind the rear wheels when forward motion is started, so the front wheels lift off the ground momentarily. This shifting of the center of gravity is caused by the rolling from a forward position to a rearward position of a small weighted ball within the surfboard as the car accelerates. Torque in the rear wheels then causes the front wheels to rise. The front wheels of the vehicle normally point in the forward direction but, through a linkage, turn to the side when the direction of motion of the vehicle is reversed. Thus, when moving forward, the vehicle's front wheels momentarily leap into the air; and, in one reverse motion, the whole vehicle turns.

3,720,020
PLUG DOOR CONTROL MECHANISM

Luther L. Bollinger, Sr., Reading, Pa., assignor to Hennessy Products, Incorporated, Chambersburg, Pa.

Filed Sept. 9, 1971, Ser. No. 179,001
Int. Cl. E05f *11/54*; E05d *15/10*
U.S. Cl. 49—362 6 Claims



Mechanism mounted on a railroad house car, side wall, for sliding a plug door lengthwise of the car in combination with a

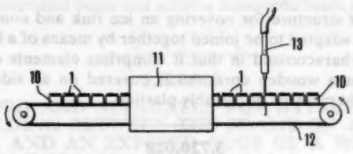
device mounted on the car wall for shifting the door transversely of an opening in the wall, there being means whereby the thrust of the door sliding mechanism is maintained in a direction parallel to the wall irrespective of the transverse shifting of the door relative to the wall.

3,720,021

METHOD FOR REMOVING CUTTING AND GRINDING BURRS FROM MACHINED INJECTION NEEDLE TUBES

Shoji Wada, 4-11, Katase-Kaigan, 1-chome, Fujisawa-shi, Kanagawa-ken, Japan

Filed Dec. 22, 1970, Ser. No. 100,717
Int. Cl. B24c *1/00*
U.S. Cl. 51—281 R **3 Claims**



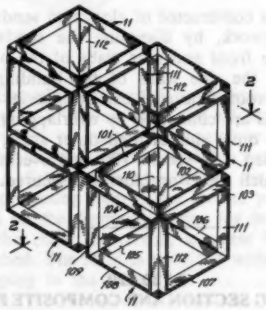
A method is provided for removing the cutting and grinding burrs sticking to or generated at the cut or ground tips of injection needle tubes. A high pressure water stream is sprayed over injection needle tubes cut to a specified length or ground at one end. The needle tubes are held upright closely adjacent to one another within a water-draining basket stretched at the bottom with a metal wire-net or the like, and the basket is put on a metal wire net conveyor continuously moving at a slow rate.

3,720,022

BUILDING CONSTRUCTION

Richard Dattner, 881 Seventh Ave., Room 605, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 94,326
Int. Cl. E04b *1/12, 9/06*
U.S. Cl. 52—79 **2 Claims**



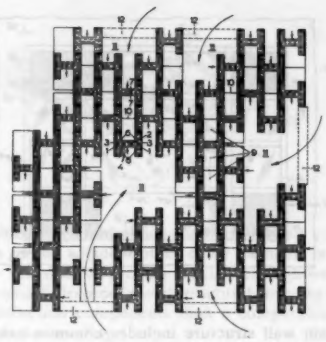
A building construction in which a basic unit of twelve elements is fabricated into a rectangular paraellelepiped to define a structurally rigid module requiring no additional structural members. A plurality of modules in the form of rectangular parellelepipeds can be assembled together in side-by-side and/or stacked relationship to form a building of substantially any desired size. Each of the twelve elements of each module has at least two legs joining the legs of adjacent elements at right angles to form a closed parallelepiped.

3,720,023

COMPLEX OF PATIO HOUSES

Adriaan Stoop, Sarenburgerweg 1A, Bloemendaal, Netherlands

Filed Aug. 25, 1971, Ser. No. 174,648
Int. Cl. E04h *1/02*; E04b *1/348*
U.S. Cl. 52—169 **9 Claims**



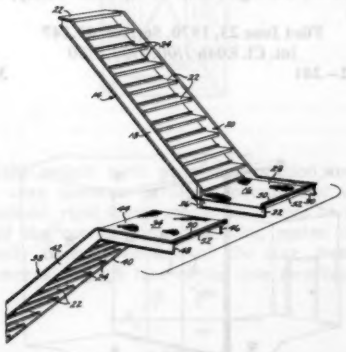
A complex of patio houses each having two mutually parallel wings and an interconnecting part perpendicular to said wings, and having an H- or h-shaped outer circumference. The houses of the complex are arranged in such a way, that the wings of any two adjacent houses always lie on one line whereas the interconnecting parts of these houses lie on opposite sides of this line. In this manner each house has at least one patio which is partially bounded by the wings of adjacent houses.

3,720,024

PREFABRICATED STACKABLE STAIR UNIT

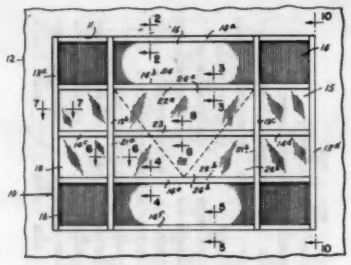
John W. Theisen, 3437 Tulane Avenue, Long Beach, Calif.

Filed Oct. 19, 1970, Ser. No. 81,727
Int. Cl. E04f *11/02*
U.S. Cl. 52—185 **1 Claim**



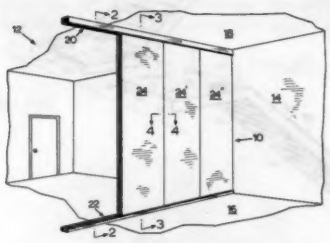
A prefabricated stackable stair unit comprising a stair flight integrally attached to a half landing having a width approximating that of the stair flight. A second stair flight with a similar half landing, but attached to its opposite extremity, can be assembled in abutting relation to the first half landing to provide a full landing. The outer stringer and adjacent outer portion of the half landing are welded together, while the inner stringer and corresponding inner portion of the half landing are secured together by a member of substantial structural strength to thereby provide load transfer.

3,720,025
CURTAIN WALL SYSTEM WITH VENTS
Ellis V. Eichman, 790 Fruitdale Road, Brownsville, Tex.
Filed March 5, 1971, Ser. No. 121,277
Int. Cl. E04b *2/88*
U.S. Cl. 52—204 **9 Claims**



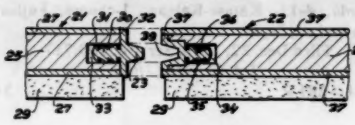
A curtain wall structure includes common extruded aluminum members which are assembled to form narrow profile vertical and horizontal mullions defining bay frames for supporting panels of glass or other structural panels. Frames for casement operating windows or vents are formed from similar extruded aluminum members, with the vent frames interfitting with the bay frames to maintain the narrow profile appearance of the curtain wall mullions. The common framing members are L-shaped in cross section defining side walls and face walls, with the face walls providing the narrow profile appearance; and are configured so that two framing members interfit with each other to maintain the narrow profile appearance. The framing members include longitudinal grooves which define panel supporting channels in the bay frames, or which retain longitudinal stops defining alternative panel supporting channels.

3,720,026
PARTITION
Otto Ferdinand Gasteiger, R.R. No. 1, Cedar Valley, Ontario, Canada
Filed June 23, 1970, Ser. No. 49,147
Int. Cl. E04h *1/00, 3/00, 5/00*
U.S. Cl. 52—241 **3 Claims**



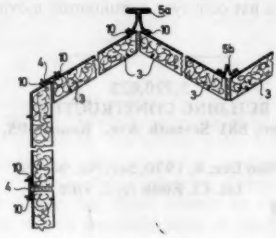
A demountable partition for dividing a large room into smaller units and including a ceiling channel and a floor channel arranged in parallel and in vertical alignment. Wall panels are adapted to engage in the channels and spring means in the ceiling channel applies a downward force on the panels and floor channel. A trim strip is housed in the ceiling channel to distribute the spring load more evenly on the panel and improve the appearance of the ceiling channel when the panels are removed.

3,720,027
FLOOR STRUCTURE
Poul Sondergaard Christensen, Ronde, Denmark, assignor to Bruun & Sorensen A/S, Aaboulevarden, Aarhus, Denmark
Filed Feb. 22, 1971, Ser. No. 117,674
Claims priority, application Denmark, Feb. 20, 1970, 835
Int. Cl. E04f *15/06*
U.S. Cl. 52—309 **5 Claims**



A floor structure for covering an ice rink and comprising elements adapted to be joined together by means of a key and tongue, characterized in that it comprises elements each of which has a wooden core and is covered on all sides by a vapor-tight material, preferably plastics.

3,720,028
SANDWICH-PANEL BUILDING CONSTRUCTION
Lajos Garay and Gabor Urban, Budapest, Andras Romhanyi, Jaszbereny, and Laszlo Sisa, Budapest, Hungary, assignors to Hutogepgyar, Jaszbereny, and Epitestudomanyl Intezet, Budapest, Hungary
Filed Oct. 8, 1970, Ser. No. 79,173
Claims priority, application Hungary, Oct. 17, 1969, CA-979
Int. Cl. E04b *2/08*
U.S. Cl. 52—284 **4 Claims**

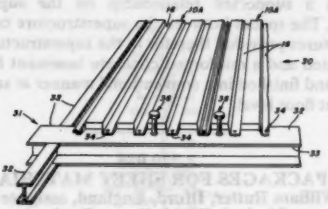


A building is constructed of elongated sandwich panels without framework, by disposing the sandwich panels upright for the front and rear walls of the building and horizontal for the side walls of the building and horizontal for the roof. The roof can be a series of inverted V's. The panels are connected by overlapping connectors secured on the outer side of their outer skins, and to this end are provided with special ribs and overhanging edge portions to which the connectors are secured.

3,720,029
FLOORING SECTION AND COMPOSITE FLOOR UTILIZING THE SAME
Bernard E. Curran, Sewickley, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed July 2, 1970, Ser. No. 51,940
Int. Cl. E04b *1/24*
U.S. Cl. 52—334 **1 Claim**

A building floor structure having flooring sections assembled in side-by-side connected relation above the horizontal beams of a building structure. Each flooring section is corrugated and has opposite transverse ends overlying the horizontal beam. Closure means at the opposite ends of the corruga-

tions, expose upper surface portions of the horizontal beam. At least one shear transfer element is secured directly to the horizontal beam at one of the upper surface portions and is



positioned to connect a subsequently poured layer of concrete to the horizontal beam and achieve composite beam construction.

3,720,030

METHOD AND APPARATUS FOR ATTACHING A MOLDING BETWEEN THE FRAME OF A VEHICLE AND AN EXPOSED EDGE OF A WINDOW PANE INSTALLED IN THE FRAME

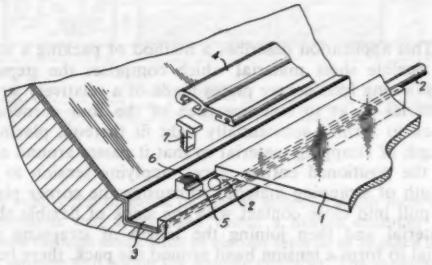
Otto Krodel, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Unterturkheim, Germany

Filed Mar. 5, 1971, Ser. No. 121,396

Claims priority, application Germany, Mar. 6, 1970, P 20 10 564.0

Int. Cl. E04f *19/02*; E04c *2/02*

U.S. Cl. 52—400 **7 Claims**



A molding strip is mounted in the space between the exposed edge of a window pane and a frame in which the pane is installed by means of a retainer constituted of two parts which are interengaged by pushing one into the other. A first part is attached to the molding strip and has a projecting stem and a second part of L shape is mounted on the frame with one leg inserted beneath the pane, the other leg having a recess into which the stem is pushed. The stem is provided with projections to insure gripping in the recess.

3,720,031

STRUCTURAL SURFACE COVERING AND METHOD OF MAKING A COVER ELEMENT THEREFOR

Robert J. Wilson, 1076 W. San Bruno, and Robert W. Naden, 39880 Avenue 7½, both of Fresno, Calif.

Continuation-in-part of Ser. No. 817,607, March 24, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 97,773

Int. Cl. E04d *3/362*

U.S. Cl. 52—520 **3 Claims**

A structural surface covering means for a wall or roof of a building or the like and method of making a cover element used in said covering means, said covering means including a plurality of tapered flanged panels or outer metal shingle-like cover elements disposed in side-by-side relation and in overlapping rows or courses upon a surface, said outer cover elements defining a plurality of tapered slots therebetween, the covering means also including a plurality of tapered flanged

spacer flashing strips underlying and interlockably connecting the flanges on the adjacent outer cover elements in masking relation to the slots to provide a relatively lightweight, virtually leak-proof, fireproof metal structural covering requiring fewer construction components than a comparable wooden shingle or shake covering.

3,720,032

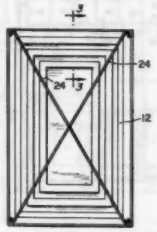
LIGHT WEIGHT PANEL CONSTRUCTION

James D. Harman, R.D. 1, Hegins, Pa. 17928

Filed Aug. 17, 1970, Ser. No. 64,416

Int. Cl. E04c *2/32*; E06b *3/70*

U.S. Cl. 52—618 **8 Claims**



A light weight rigid panel construction including a plastic core member having a plurality of concentric corrugations, rigid frame means positioned in the outermost of the corrugations, tensioning means connecting diagonally opposite corners of the core member, and cover means on each face of the core member.

3,720,033

ROOF BUILDING ELEMENT AND METHOD OF MAKING A ROOF

Johannes Balfour Van Burleigh, Ede, Netherlands, assignor to Cornelia Breas and Margo Charlotte Breas, both of Ede, Netherlands, part interest to each

Filed Aug. 13, 1970, Ser. No. 63,515

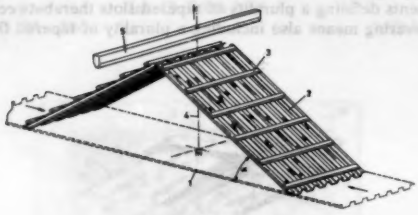
Claims priority, application Netherlands, Aug. 16, 1969, 12507/69

Int. Cl. E04d *3/30*

U.S. Cl. 52—741 **3 Claims**

A roof is made by means of a building element in the form of sheet piling having a narrow weakened central zone trans-

verse to its longitudinal direction, by which the panel is hoisted from, and attached to, the ridge beam, the panel



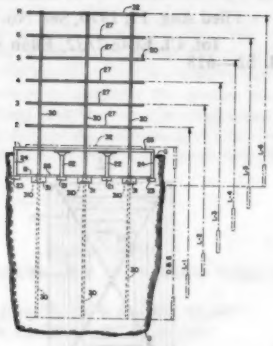
thereby being automatically bent to form a gable roof section by gravity. The cross-sectional contour of the panel provides channels for insulation and ventilation.

3,720,034

METHODS FOR CONSTRUCTING MULTI-STORY STRUCTURES

Fred M. Dawley, 200 Country Club, Camelot, Apts., Largo, Fla.

Filed March 10, 1971, Ser. No. 122,778
Int. Cl. E04g *21/14*
U.S. Cl. 52—742 **11 Claims**



The method of building multi-story structures comprising storing superstructure columns vertically in the ground with the tops thereof disposed at a selected distance above a selected first floor level, providing a footing for each superstructure column at a selected distance below a selected basement floor level centrally apertured to accommodate said columns freely therethrough. Each said superstructure column is of a sufficient length ultimately to extend from the bottom of said footing to a small distance above the roof level of the completed structure. A conventional first floor slab is constructed at said selected first floor level supported on conventional basement columns, basement walls and footings spaced uniformly from said superstructure columns and footings.

Reinforced concrete roof and floor slabs are then sequentially constructed in removable relationship on forms provided therefor on said conventional first floor slab including supporting and permanently fixing each said roof and floor slab on said superstructure columns in advance of raising the same, sequentially raising said superstructure columns in unison the desired designed distance between the roof and each of the floors therebelow after said roof slab and each said floor slab therebelow has been constructed in removable relationship on said forms and permanently supported on and fixed to said superstructure columns.

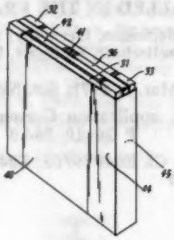
After the superstructure columns have been raised to their final positions with the second, third, fourth, fifth, sixth floor slabs and the roof slab permanently secured at their selected vertical heights thereon, the said superstructure columns are fixed in a supported relationship on the superstructure footings. The spaces between the superstructure columns and the apertures provided therefor in the superstructure footings are grouted and a reinforced concrete basement floor slab is poured and finished in a conventional manner at said selected basement floor level.

3,720,035

PACKAGES FOR SHEET MATERIAL

Peter William Rutter, Ilford, England, assignor to Ilford Limited, Ilford, Essex, England

Continuation-in-part of application Ser. No. 775,289, Nov. 11, 1968. This application June 26, 1970, Ser. No. 50,099
Claims priority, application Great Britain, June 26, 1969, 32,424/69
Int. Cl. B65b *13/02, 25/14*
U.S. Cl. 53—3 **7 Claims**



This application describes a method of packing a stack of flexible sheet material which comprises the steps of positioning four corner pieces made of a relatively strong material so as to embrace each of the four corners of stack to form a substantially tight fit thereon, placing a length of strapping material so that it passes around each of the positioned corner pieces, applying tension to the length of strapping material so causing the corner pieces to pull into close contact with the stack of flexible sheet material and then joining the length of strapping material to form a tension band around the pack, there being applied to the stack two sheets of rigid material on the opposite faces of the stack, as a step preceding the application of tension to the strapping material, said sheets of rigid material serving to disable the stack from flexing.

3,720,036

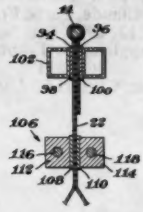
METHOD FOR AUTOMATICALLY ATTACHING A HANDLE TO BAGS

William A. Armstrong, Brookpark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1970, Ser. No. 99,781
Int. Cl. B65b *61/14*
U.S. Cl. 53—14 **5 Claims**

Method and apparatus for affixing a stiffening member such as a wooden or plastic rod across the top end of a filled or unfilled bag element to provide a handle therefor that uniformly distributes the carrying load across the width of the bag. In one form of the invention, for example, a plastic bag and a rod of discreet length are moved together through a folding tunnel where the top portion of the bag is automatically folded over to encapsulate the rod. The folded over portion is then secured circumferentially about the rod by heat welding. A

second weld is formed beneath the first weld, and hand or finger-size cutouts are punched or otherwise located in the region between the two welds. The cutouts cooperatively with



the rod form a carrying handle of the above-noted quality. A step of strategically heating the film to tightly shrink the same about the encapsulated rod is additionally disclosed.

3,720,037

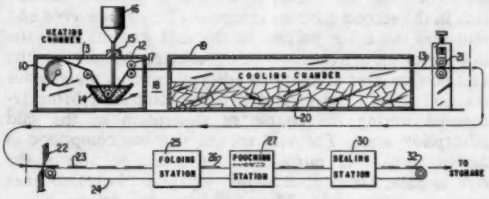
METHOD AND APPARATUS FOR PACKAGING MEDICATED GAUZE PADS

Edward W. Jones, Brigantine, N.J., assignor to Pioneer Laboratories, Inc., Pleasantville, N.J.

Continuation of Ser. No. 886,995, Dec. 22, 1969, abandoned. This application Nov. 18, 1971, Ser. No. 200,139

Int. Cl. B65b *55/14*

U.S. Cl. 53—21 FC **8 Claims**



A supply roll of gauze or similar material in the form of a continuous web is enclosed within a heated chamber and passed through medication in viscous form so as to place it on the moving web within the heating chamber. The medication is distributed throughout the gauze so as to impregnate the gauze and the gauze web is then moved through a cooling chamber to solidify the medication. The medication impregnated web is then cut into sections of a predetermined length and each of the sections are folded. The folded section is then inserted into a flat package and sealed.

3,720,038

METHOD AND APPARATUS FOR COVERING OPEN ENDED CONTAINER BODIES

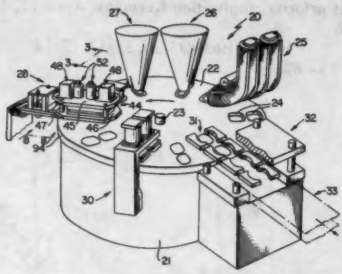
George D. Bryan, Jr., Mechanicsville, and Nicholas Constantino, Richmond, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed March 26, 1971, Ser. No. 128,360

Int. Cl. B65b *7/00, 41/12, 51/04*

U.S. Cl. 53—39 **23 Claims**

Method and apparatus for covering a product filled and open ended container body wherein an annular knife is carried by a stationary frame and a blanking die is also carried by the frame so that relative movement between the blanking die and the knife can compress an unblanked portion of a cover strip between the same to cut a cover member therefrom. A transfer device is also movably carried by the frame and has means for holding the cut cover member as the cover member is cut from the strip so that the transfer device can transfer the cut cover member from adjacent the knife to the open end of the container body. As the transfer device is disposing the cover member on the open end of the container body, a securing device tack seals part of the cover member to the open end



of the container body. The transfer device has means for forming a slight depression in the cover member inboard of the open end of the container body for cover member expansion purposes as the transfer device places the cover member on the open end of the container body.

3,720,039

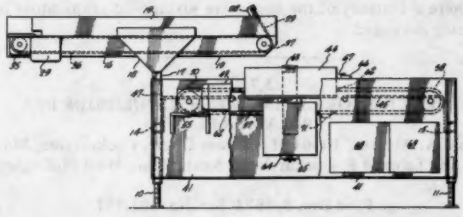
BOX FILLING APPARATUS

Aaron James Warkentin, 23561 East Dinuba Avenue, Dinuba, Calif.

Filed Nov. 5, 1970, Ser. No. 87,091

Int. Cl. B65b *57/00*

U.S. Cl. 53—59 W **9 Claims**



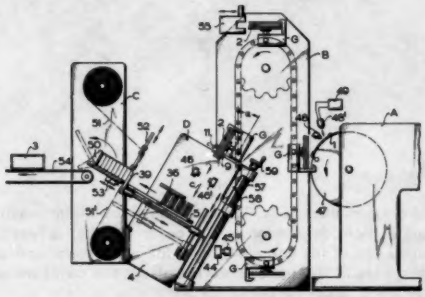
An apparatus for filling boxes with produce such as plums, apples, citrus fruit, melons, or vegetables such as potatoes, or the like, comprises an endless belt conveyor which is drive when energized by a variable electric motor at a fast or full speed until the box to be filled is substantially 95% filed and then stops momentarily after which it proceeds at a slower speed to cause a dribble feed to fill the box to substantially 100 percent of the desired weight. The momentary stop is to accommodate fruit which is freely falling, which occasionally causes the box to be substantially 100 percent filled without the necessity of the dribble feed. Associated means drives boxes to be filled to a scale, which scale has associated switches to control the stopping of the fast run of the conveyor belt, the starting of the slow run of the conveyor belt, and eventually to stop the conveyor belt and start the index motor to convey the boxes to be filled to the scale and, when filled, off of the scale. A safety switch is provided to prevent running of the conveyor in the absence of a box to be filled.

The apparatus is arranged so that the conveyor of the produce to the boxes to be filled runs countercurrent into the path of the boxes, or alternately in the same direction thereof. The speed of the conveyor is adjustable to accommodate different size fruit and different rates of packing.

3,720,040
APPARATUS FOR FORMING PARCELS OF PARALLELIPIPED SHAPE FROM INDIVIDUAL STACKS OF FLATTENED PAPER

Herman Rocker, Hulben, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed April 15, 1971, Ser. No. 134,307
Claims priority, application Germany, April 17, 1970, P 20 18 592.6
Int. Cl. B65b *35/36, 35/52, 57/14*
U.S. Cl. 53—62 13 Claims

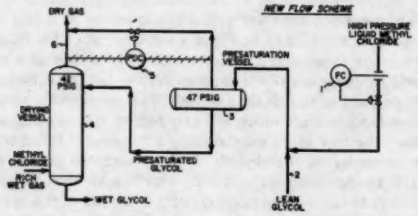


Parcelling apparatus for installation downstream of a stacking device of paper or plastics bag-making machinery that delivers stacks of flattened bags, the parcelling apparatus having means for engaging successive stacks arriving lengthwise from the stacking device and for swinging the stacks sideways through 90° in alternately opposite directions, means for feeding the swung stacks to and depositing them side-on onto a table which extends normal to the feeding direction, and a reciprocatable pushing device which is adapted to move the deposited stacks to a parcelling station where a plurality of the stacks are juxtaposed preparatory to being packaged.

3,720,041
PROCESS FOR DRYING METHYL CHLORIDE IN A POLYMER PLANT

Jose A. Alvarez, 10301 H Malcom Circle, Cockeysville, Md., and Edward F. Upchurch, 59 Keats Road, West Millington, N.J.

Filed Dec. 8, 1971, Ser. No. 205,787
Int. Cl. B01d *53/14*
U.S. Cl. 55—29 8 Claims

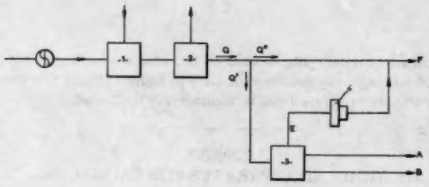


A process for drying methyl chloride in a butyl rubber process using glycol is improved by presaturating the glycol with liquid methyl chloride thereby avoiding temperature increases during presaturation. Need for a glycol-methyl chloride cooler is thereby eliminated. Since the absorber operates at a lower temperature, drying of the methyl chloride stream is more complete.

3,720,042
METHOD OF PRODUCTION OF PURE HYDROGEN AND MIXTURES CONTAINING HYDROGEN IN DEFINITE PROPORTIONS

Guy Simonet, Paris, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation de Procedes Georges Claude, Paris, France

Filed July 12, 1971, Ser. No. 161,614
Claims priority, application France, July 16, 1970, 7026211
Int. Cl. B01d *53/04*
U.S. Cl. 55—25 7 Claims

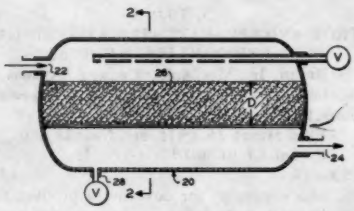


A method of production of hydrogen of high purity together with a mixture containing hydrogen and a second gaseous compound in definite molar proportions, from a gaseous flow containing a preponderant content of hydrogen and the said second gaseous compound, in which a portion of the gaseous flow is subjected to a treatment for separation of the excess hydrogen, a gaseous fraction rich in the second gaseous compound being recovered and sent into the other portion of the said gaseous flow, the said separation treatment being effected by passing the said portion over at least one adsorption mass, the gaseous fraction rich in the second gaseous compound being recovered during the course of desorption of the said adsorption mass. The said second gaseous compound is carbon dioxide or nitrogen and the said portion of the flow is passed over at least two separate adsorption lines operating alternately. The invention also relates to an installation for carrying this method into effect.

3,720,043
METHOD FOR HIGH EFFICIENCY FILTERING SYSTEM

Julius Louis Kovach, Columbus, Ohio, assignor to North American Carbon, Incorporated, Columbus, Ohio

Filed June 22, 1970, Ser. No. 47,941
Int. Cl. B01d *53/04*
U.S. Cl. 55—74 4 Claims



A method for high efficiency filtration of both gaseous and particulate radioactive contaminants characterized by a single pass of an air stream carrying the contaminants through a single bed of granular materials and then venting the filtered

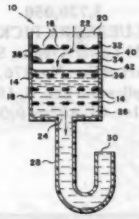
stream to the surrounding environment. The granular bed is characterized by a given minimum depth of adsorbent particles of a given minimum size range which preferably is calculated on a basis dependent upon a given minimum removal efficiency of radioactive gaseous and particulate matter.

3,720,044

STRENGTH COMPOUNDING CAPILLARY ARRAY

Robert K. Grove, Los Altos, and Richard O. Sloma, Cupertino, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 4, 1971, Ser. No. 103,742
Int. Cl. B01d *19/00*
U.S. Cl. 53—159 5 Claims



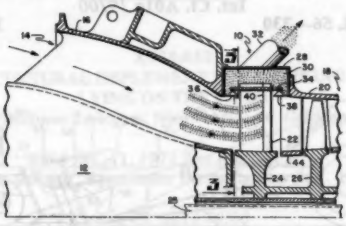
A strength compounding capillary array for liquid management systems such as liquid-gas separators. Multiplication of the capillary liquid retention force available from a single capillary element and/or an increase in capillary aperture dimensions for improved liquid flow is provided. A plurality of peripherally enclosed self-wicking and self-sealing capillary elements are held in a serial spaced apart relationship. The spacing may be provided by stacking the capillary elements interleaved with non-self-sealing elements. The closed liquid films at each capillary element maintain an additive series of closed gas retaining compartments between the elements during the absence of liquid therein.

3,720,045

DYNAMIC BLADE PARTICLE SEPARATOR

Joseph P. Murphy, Newtown, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 16, 1970, Ser. No. 89,733
Int. Cl. B01d *45/12*
U.S. Cl. 55—306 1 Claim



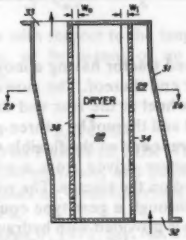
A dynamic rotor blade particle separator for separating and removing foreign particles from the engine inlet air is disclosed. The dynamic separator utilizes a rotating set of blades, each with a radial slot and catching lip on the pressure side of the blade. The foreign particles are caught by the lip, subjected to the centrifugal force field of the blades and centrifuged to an outer collection chamber for ejection.

3,720,046

FLOW DISTRIBUTION APPARATUS

Alvydas A. Kudirka, Elliott L. Burley, and Robert H. Moen, San Jose, Calif., assignors to General Electric Company

Filed June 5, 1969, Ser. No. 830,769
Int. Cl. B01d *45/00*
U.S. Cl. 55—414 7 Claims



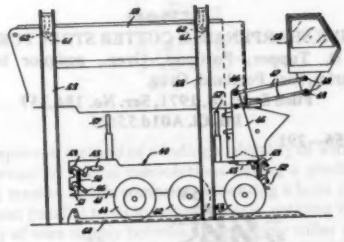
A flow distribution structure for distributing the flow of fluid through low-pressure drop fluid processing apparatus such as a vane type gas separator or dryer situated between parallel or counter-flow headers wherein variably apertured flow distribution plates are provided adjacent inlet and outlet sides of the separator.

3,720,047

UNIVERSAL TRACTORS

Cornelius van der Lely, 7 Bruschenrain, Zug, Switzerland

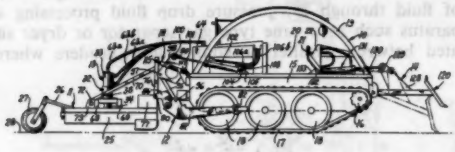
Filed Oct. 3, 1969, Ser. No. 863,576
Claims priority, application Netherlands, Oct. 7, 1968, 6814307; May 28, 1969, 6908076; Aug. 7, 1969, 6912024; Sept. 23, 1969, 6914378
Int. Cl. A01d *75/22*
U.S. Cl. 56—15.6 15 Claims



A self-propelled vehicle has a driver platform pivotally coupled to its frame through one or more arms. The platform can be moved to occupy various positions to facilitate loading and handling. Various implements and other objects can be supported on or coupled to the vehicle by moving the driver platform to accommodate the objects. The entire loading surface supported by the frame can thus be used. Coupling members

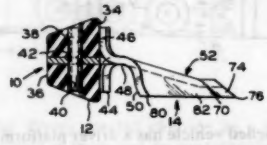
and lifting devices are mounted on the vehicle to assist in loading, unloading and connecting the objects.

3,720,048
TRACTOR DRAWN MOWER
Willard L. Grubb, Richmond; Howard E. Turner, Jeddo, both of Mich., and James W. Brazell, Atlanta, Ga., assignors to Health International, Inc., Richmond, Mich.
Filed Feb. 16, 1971, Ser. No. 115,248
Int. Cl. A01d *35/26*
U.S. Cl. 56—15.9 **34 Claims**



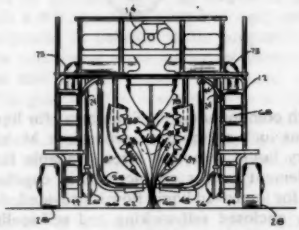
A flexible tracked tractor having a mower operatively connected to the rear end thereof. The mower is provided with a ground engaging wheel at the rear end thereof, and it is supported at the front end thereof by a three-point lift hitch which is attached to the rear end of the flexible tracked tractor. The rotary cutter is power driven from a pressurized hydraulic fluid source carried on the tractor. The rotary cutter is operatively connected through a gear type coupling to a hydraulic drive motor which is provided with hydraulic fluid under pressure from said pressurized hydraulic fluid source on said tractor. The three-point lift hitch includes an upper link having one end pivotally attached to the front end of the mower and the other end pivotally attached to the tractor, a lower link assembly having one end thereof pivotally attached to the tractor and the other end thereof pivotally attached to the front end of the mower at two spaced apart positions below the attachment position of the upper link, a lift bar having a lower end pivotally attached to said lower link assembly, a lever pivotally mounted on a horizontal axis on said tractor, and with the upper end of said lift bar being pivotally attached to said lever on a horizontal axis at a position laterally spaced apart from, and parallel to, the pivot axis of said lever on said tractor, and power means mounted on said tractor and being pivotally connected to said lever on a horizontal axis at a point triangularly spaced from, and parallel to, the pivotal mounting axes of said lever and said lift bar, wherein when the power means is actuated, the lever is pivoted upwardly from a mowing position to lift said lower link assembly to a raised position.

3,720,049
SIDE SHARPENABLE CUTTER STRUCTURES
Myron D. Tupper, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.
Filed Sept. 28, 1971, Ser. No. 184,337
Int. Cl. A01d *55/24*
U.S. Cl. 56—291 **5 Claims**



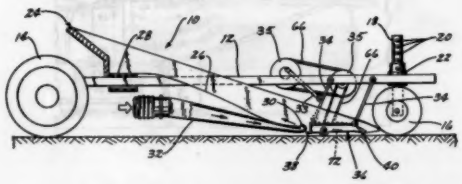
Endless V-belts mounted on swathers or mowers carry side sharpenable cutters secured to the belts. One cutter includes a body having a tang projecting through a slot in the V-belt and locked thereto by a transverse roll pin with angular, oppositely extending, transverse feet portions of the body engaging the outer face of the belt, an offsetting portion extending outwardly from the belt, a shank portion transverse to the offsetting portion, and an inclined cutter plate which has a side surface which can be ground to sharpen a cutting edge thereon. The cutter plate has an angularly positioned outer edge portion which causes the cutting edge to be hooked when sharpened. In another cutter, the mounting plate extends completely through the V-belt and a roll pin and an arcuate washer secure the mounting plate to the V-belt. Another cutter includes an angular body portion, an off-setting portion and a shank portion forming a U. The shank portion carries an inclined side cutter, and a staple extends through the body, the belt and an arcuate washer to secure the cutter to the belt. An inclined side plate is secured to a shank carried by a body portion joining the shank and the foot.

3,720,050
BLUEBERRY PICKER
Ralph E. Rozinska, 921 Lewis Avenue, St. Joseph, Mich.
Continuation-in-part of Ser. No. 876,244, Nov. 13, 1969, abandoned. This application Feb. 4, 1972, Ser. No. 223,448
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **10 Claims**



A self-propelled blueberry picker with a deflector and cooperating means which may be reciprocally agitated to force the bushes outwardly and downward and including means to direct air streams against the bushes to aid in removing berries from the bushes into pickup arms which extend along opposite sides of the frame of the machine. The berries are conveyed by vacuum from the arms to a container wherein leaves and trash are separated from the berries.

3,720,051
GROUND COVER FRUIT HARVESTING MACHINE
Graeme R. Quick, Ames, Iowa, assignor to Iowa University Research Foundation, Inc., Ames, Iowa
Filed Nov. 26, 1971, Ser. No. 202,271
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **10 Claims**



A ground cover fruit harvesting machine comprises a wheel-mounted supporting frame having forward and

rearward ends, and having a plurality of laterally spaced tooth elements extending forwardly therefrom. Each of the tooth elements has a longitudinal slot therein. A picking element is mounted for sliding movement within each of the slots of the tooth elements, and means are provided for oscillating the picking elements within the slots.

3,720,052

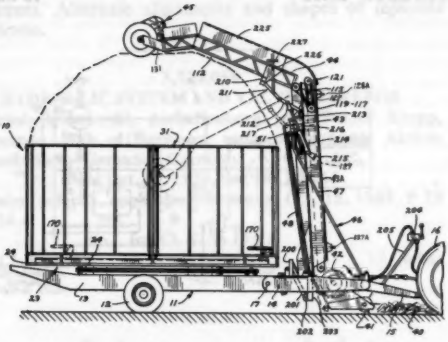
HAYSTACKING MACHINE

Joseph A. Anderson, Minot, and Chester G. Neukom, Jamestown, both of N. Dak., assignors to Haybuster Manufacturing, Inc., Jamestown, N.Dak.

Continuation of Ser. No. 858,999, Sept. 18, 1969, abandoned. This application May 3, 1971, Ser. No. 139,892

Int. Cl. A01d *87/02*

U.S. Cl. 56—346 **22 Claims**



A hay stacking assembly which includes a pickup for picking loose hay up from a window and conveying it into a stacker assembly that has a stack support bed that rotates as the stacker moves. Means are provided for packing the hay into the stacker assembly until a complete hay stack is formed. When the hay stack is formed, the packed hay stack is removed from the stacker bed through the use of a push off device, and the unit is then again used for making another hay stack.

The unit can be used as a hay stack mover if desired upon the application of proper hay stack loading means.

3,720,053

AGRICULTURAL IMPLEMENT FOR WORKING CROP LYING ON THE FIELD

Petrus Wilhelmus Zweegers, Nieuwendijk 46, Geldrop, Netherlands

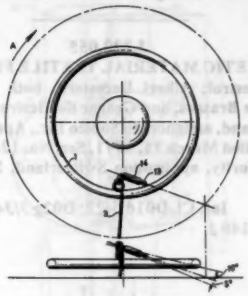
Filed Jan. 11, 1971, Ser. No. 105,274

Claims priority, application Netherlands, Jan. 14, 1970, 7000493

Int. Cl. A01d *79/00*

U.S. Cl. 56—370 **11 Claims**

An agricultural rotary rake implement for working crop lying on the field. The implement comprises a movable frame which carries at least one rotary element for rotation in a substantially horizontal, slightly forwardly inclined plane. Each rotary element carries a circular array of substantially radially protruding resilient tines. A tine which is restrained in its rotary movement, is upwardly guided with respect to its mounting by means of a guide surface such as an inclined cam fixed on the rotary element, or by means of an inclination of the



pivot pin of the tine with respect to the tangential direction of the rotary element, or by means of an inwardly yielding mounting of the tine.

3,720,054

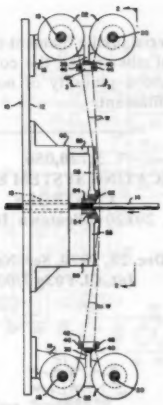
METHOD AND APPARATUS FOR WIRE WINDING

Rudlof H. Haehnel, West Lawn, and John L. Wily, Reading, both of Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Sept. 7, 1971, Ser. No. 177,979

Int. Cl. B65h *81/08*

U.S. Cl. 57—9 **9 Claims**



An improved method of winding a plurality of wires about a hose carcass in helical convolutions having a predetermined winding tension which comprises mounting a hose carcass for movement parallel to its longitudinal axis, rotating in unison a plurality of wire supply bobbins and preform roller pins about said axis, withdrawing a single wire from each bobbin, guiding it along a path extending toward said axis, independently tensioning each wire to have a predetermined uniform withdrawal tension, attaching the wires to the carcass and longitudinally advancing the carcass to simultaneously pull the wires from their bobbins and progressively wind the wires in helical convolutions about the carcass, wrapping each wire 360° around a preform roller pin curvature having a preselected diameter less than said hose carcass diameter to impart to each wire a permanent convoluted shape prior to

winding it on the carcass, and selecting that combination of uniform wire withdrawal tension and roller pin curvature diameter which produces said predetermined winding tension.

An improved and novel apparatus for carrying out the above-described winding method is also provided.

3,720,055

SYNTHETIC MATERIAL TEXTILE FILAMENTS

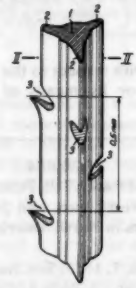
Henri de Mestral; Albert Decosterd, both of Morges; Guy Calame, Le Brassus, and George de Mestral, Commugny, all of Switzerland, assignors to Sobico Inc., Apartado, Panama

Filed March 11, 1971, Ser. No. 123,239

Claims priority, application Switzerland, March 20, 1970, 4237/70

Int. Cl. D01d 5/22; D02g 3/34

U.S. Cl. 57—140 J **6 Claims**



A synthetic material textile filament comprises an elongated core, a plurality of ribs around the core, each rib extending along the core, and a plurality of notches in the ribs distributed along the filament.

3,720,056

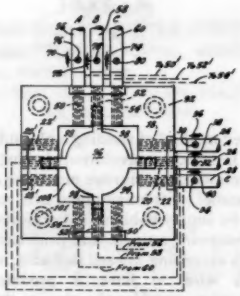
DRIVE OR INDICATING SYSTEM EMPLOYING FLUID CONTROLS

Bruce A. Sawyer, 20120 Allentown Drive, Woodland Hills, Calif.

Filed Dec. 28, 1970, Ser. No. 101,998

Int. Cl. F03g 7/00

U.S. Cl. 60—1 **41 Claims**



This invention relates to a system in which a head is displaced from, but is in contiguous relationship to, a platen and is driven or is positionable along either a single axis or a pair of coordinate axes relative to the platen. The head and the platen have grooves for receiving a fluid such as pressurized air which causes the head and the platen to interact so that the head is driven on a controlled basis along either the single axis or independently along the pair of coordinate axes relative to the platen. Because of the provision of the grooves in the head and the platen, the position of the head relative to the platen can be indicated at each instant as the head moves along the platen. Means may be provided on the head for preventing the head from rotating as it moves along the platen. Means may also be provided in the head for maintaining the head in displaced relationship to the platen.

3,720,057

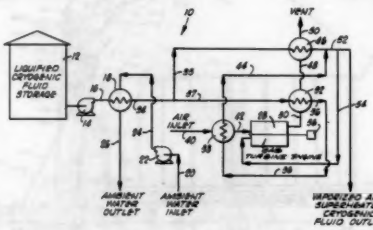
METHOD OF CONTINUOUSLY VAPORIZING AND SUPERHEATING LIQUEFIED CRYOGENIC FLUID

Edwin M. Arenson, El Reno, Okla., assignor to Black, Sivalls & Bryson, Inc., Oklahoma City, Okla.

Filed April 15, 1971, Ser. No. 134,159

Int. Cl. F02c 7/34; F02m 31/60

U.S. Cl. 60—39.02 **18 Claims**



The present invention relates to a method of continuously vaporizing and superheating liquefied cryogenic fluid for an ultimate use. A stream of liquefied cryogenic fluid is passed in heat exchange relationship with a stream of ambient water so that the cryogenic fluid is heated and vaporized. The vaporized cryogenic fluid stream is divided into first and second portions and the first portion is passed in heat exchange relationship, with the input combustion air to a gas turbine engine so that the air is cooled and the power output of the turbine increased. The second portion is passed in heat exchange relationship with the exhaust gases generated by the gas turbine engine so that the second portion is superheated to a predetermined temperature level, and the first and second portions of the vaporized cryogenic fluid stream are then combined so that a stream of vaporized cryogenic fluid superheated to a desired temperature level is produced. The power output of the gas turbine is advantageously used for providing power for pumping the streams of liquefied cryogenic fluid and ambient water.

3,720,058

COMBUSTOR AND FUEL INJECTOR

Eric S. Collinson, deceased, late of Loveland, Ohio, by Eva M. Collinson, executrix, Loveland, and Werner E. Howald, Cincinnati, Ohio, assignors to General Electric Company

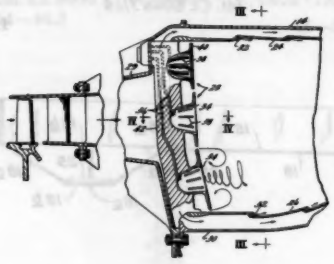
Filed Jan. 2, 1970, Ser. No. 352

Int. Cl. F02g 1/00

U.S. Cl. 60—39.74 R **9 Claims**

A fuel injector is shown having a hemispherical cup which opens downstream into a combustion zone. A baffle plate extends outwardly of the cup. Air entering tangential slots creates an axial vortex which breaks up fuel introduced tangentially at the rear of the cup. Air flowing over the edges of the cup creates a peripheral vortex. The com-

bined action of these vortices provides a stable flame front of short axial length. The fuel injectors are disposed in three circumferential rows around an annular combustion



zone. The injectors are radially aligned on integral mounting struts. Alternate alignments and shapes of injectors are shown.

3,720,059

HYDRAULIC SYSTEM AND VALVE THEREFOR

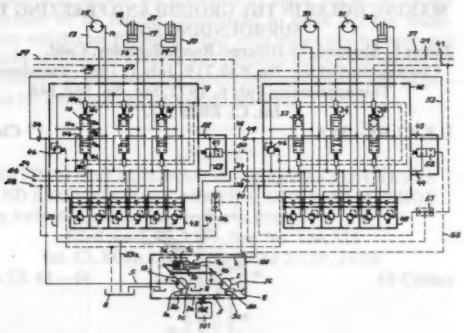
Siegfried Schurawski, Aschaffenburg, and Walter Kropp, Obernau, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Oct. 14, 1970, Ser. No. 80,665

Claims priority, application Germany, Oct. 15, 1969, P 19 52 034.4

Int. Cl. F16b *15/18*

U.S. Cl. 60—421 **19 Claims**



A two-pump hydraulic system having a hydraulic load which, when actuated, is automatically pressurized by both pumps through a novel valve system. Normally each of the pumps circulates hydraulic fluid along a closed path to a reservoir and can be used independently to operate respective loads.

3,720,060

FANS

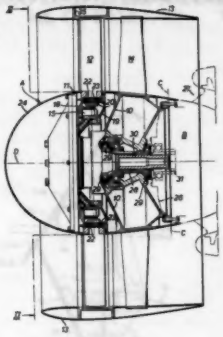
Stuart Duncan Davies, Charlton Kings, and John Alfred Chilman, Painswick, England, assignors to Dowty Rotol Limited, Gloucester, England

Filed Nov. 19, 1970, Ser. No. 91,000

Int. Cl. F02k *3/00*

U.S. Cl. 60—226 R **13 Claims**

A fan assembly for attachment to the front of a main gas turbine engine assembly to provide an engine of the ducted-fan by-pass type is constructed as a unitary assembly which can be fitted and removed as such. The assembly comprises a non-rotative portion including a main body and a by-pass duct, and a rotative sub-assembly supported in bearings by the non-rotative portion and including a hub structure and fan blading positioned and rotatably supported within the non-rotative by-pass duct.



3,720,061

CLAMPING UNIT FOR THE CASTING MOLD OF AN INJECTION MOLDING MACHINE

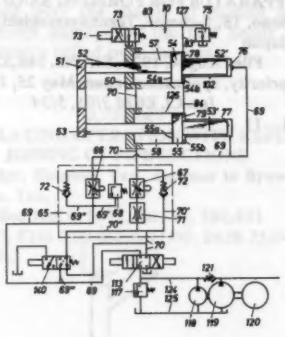
Karl Hehl, Siedlung 183, Lossburg, Wurtt., Germany

Filed Oct. 18, 1971, Ser. No. 189,977

Claims priority, application Germany, Oct. 17, 1970, P 20 51 083.2; Jan. 28, 1971, P 21 03 926.9

Int. Cl. F15b *15/18*

U.S. Cl. 60—468 **17 Claims**



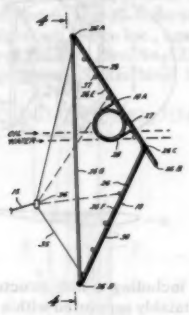
A clamping unit for the mold halves of an injection molding machine including a mold carrier for one of the mold halves and hydraulic drive means including pressure cylinders, hydraulic drive cylinders and a pump system. The pressure cylinders include a piston therein from which the pistons of the hydraulic drive cylinders extend. The pistons divide the pressure cylinders into two chambers with the surface area of the piston being different in each chamber. The pressure cylinders include a connecting channel for connecting the two chambers, with the connecting channel including a shut-off valve for effecting control between the two chambers. The pressure cylinders further include a frontal face on which the other of the mold halves is supported. The pressure cylinders and drive cylinders are each directly fed by the pump system which delivers a pressure medium in either one of two ranges for effecting control of the clamping unit.

3,720,062

LIQUID CONFINING AND COLLECTING APPARATUS

William T. Mack, 2527 Azalea, Tyler, Tex.

Filed July 9, 1970, Ser. No. 53,586
Int. Cl. E02b *15/04*; B01d *21/00*
U.S. Cl. 61—1 F 16 Claims



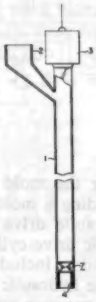
There is disclosed an elongate, impervious barrier which is flexible intermediate its ends and has upper and lower faces which converge forwardly to intersect on its front side. Buoyant means is carried by the barrier to normally maintain it in a generally upright position within a body of water and with the intersection of the upper and lower faces below a lighter phase thereof.

3,720,063

APPARATUS FOR FORMING SAND PILES

Masaru Shono, 18, 5-chome, Tezukayamanishi, Sumiyoshi-ku, Osaka, Japan

Filed Aug. 4, 1971, Ser. No. 168,830
Claims priority, application Japan, May 25, 1971, 46/35666
Int. Cl. E02d *3/08, 5/34*
U.S. Cl. 61—11 8 Claims



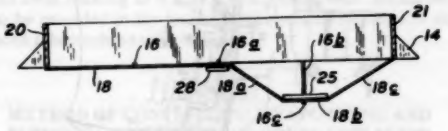
An apparatus for forming compacted sand piles the apparatus is provided with a sleeve fitted slidably into the lower portion of a casing pipe and a removable neck portion which moves in the an associated relationship with said sleeve at said casing pipe at the upper position spaced appropriately from the lower end of said casing pipe thereby to be able to form the compacted sand piles.

3,720,064

TIE RODS SYSTEM FOR SWIMMING POOLS WITH HOPPER BOTTOMS

Raymond L. Hall, 19 Hamilton Court, Whippany, N.J.

Filed Feb. 17, 1972, Ser. No. 227,123
Int. Cl. E04h *3/18*
U.S. Cl. 61—35 12 Claims



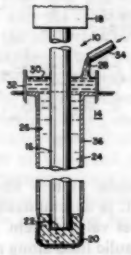
This invention pertains to swimming pools and in particular to those swimming pools made with substantially straight sidewalls disposed to generally retain a flexible liner. These sidewalls are usually restrained against outward thrust by tie rods or straps extending from one side to the other when the swimming pool configuration is other than round. These tie rods or straps prevent the sidewalls from moving outwardly from the side thrust of the water pressure in the pool. In the present invention these tie bars or straps for holding the two sidewalls in their erected and spaced condition are disposed to extend from one side to an opposite side while conforming to a hopper contour and with each retained in a depressed condition at its mid-points by means of a pressure pad of determined size which utilizes the weight of the water within the pool to apply a downward force sufficient to keep the pad and the restrained straps from lifting.

3,720,065

MAKING HOLES IN THE GROUND AND FREEZING THE SURROUNDING SOIL

James L. Sherard, 70 Hillcrest Road, Berkeley, Calif.

Continuation of Ser. No. 838,219, July 1, 1969, abandoned.
This application July 6, 1971, Ser. No. 160,146
Int. Cl. E02d *3/12*
U.S. Cl. 61—36 A 17 Claims



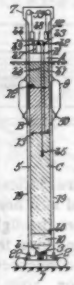
A method and apparatus for forming holes in the ground and for freezing the soil forming the walls of the holes for the purpose of temporarily solidifying zones of unstable soil adjacent to excavations and for forming open holes in unstable soil below the water table that are useable to make cast-in-place concrete piling, sand drains and water wells. The general method comprises the steps of forming a hole in the ground by driving or pushing a mandrel downward, which mandrel has a stem with cross-sectional area smaller than a drive foot on its lower end; supplying a flowable material in the space in the ground around the mandrel stem which prevents the hole from caving in, keeps the ground water out of the hole and freezes the soil surface comprising the walls of the hole.

3,720,066

INSTALLATIONS FOR SUBMARINE WORK

Robert H. Vilain, Maisons-Alfort, France, assignor to Compagnie Francaise D'Entreprises Metalliques, Paris, France

Filed Nov. 20, 1969, Ser. No. 878,460
Int. Cl. B63b *35/44*; B65d *87/08*; E02d *17/00*
U.S. Cl. 61—46.5 10 Claims



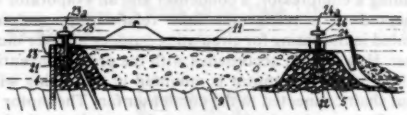
An offshore drilling platform has a column which can be articulated by a universal joint to a base anchored to the seabed. The column is subdivided into a plurality of superposed ballasting compartments. Means are provided for external control, from a compressed air source, of the flooding or emptying of at least one of the compartments. One compartment close to the articulated end of the column can be flooded during positioning the structure so that the water compresses the air before it. Means are provided to allow the air to escape thereafter or be further pressurized to drive out the water. Floats which can be partly filled with water can be arranged radially around the column and emptied during the setting up operation. Oil dashpot type shock-absorber means can be provided for damping impact against the base.

3,720,067

METHOD FOR BUILDING IMMERSED STRUCTURES AND A DEVICE FOR CARRYING OUT SAID METHOD

Jean Aubert, 8, rue La Boetie, Paris, France

Filed April 15, 1971, Ser. No. 134,328
Int. Cl. E02b *3/06*, *7/00*; E02d *27/20*, *29/06*
U.S. Cl. 61—46 19 Claims



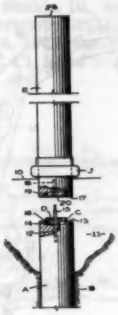
A method and device for the construction of dams or dikes either in rivers or in the sea. A wall of sheet piles is set in position by embedding in the bottom, a row of projecting elements is placed alongside said wall in substantially parallel relation thereto, the space formed between said projecting elements is packed with filling material, a prefabricated raft which is supported on the sheet-pile wall and on the row of elements is set in position underwater on the bottom which has thus been prepared, grout is injected into at least part of the foundation mass, whereupon the raft is anchored relative to the mass.

3,720,068

METHOD AND APPARATUS FOR SPLICING REPLACEMENT PILE SECTION TO PILE STUB

Eugene R. De Rosa, 1649 Fernside St., Redwood City, Calif. 94061

Filed Apr. 12, 1972, Ser. No. 243,342
Int. Cl. E02d *5/60*
U.S. Cl. 61—53 9 Claims



Method and apparatus for splicing replacement pile section to pile stub, wherein the replacement pile section is moved into axial alignment with respect to the pile stub so that the former will be mounted on the latter, with a waterproof adhesive being placed therebetween to provide a bonded joint. Moreover, a plurality of connector plates are nailed to the replacement pile section and the pile stub to overlap the joint, and layers of waterproof mastic are placed over the connector plates; and then felt, or the like, is disposed over the mastic to protect a resilient tubular boot from damage by the nail heads when the boot is subsequently rolled over the joint.

3,720,069

PIPELINE LAYING OPERATION WITH EXPLOSIVE JOINING OF PIPE SECTIONS

Joe C. Lockridge, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Jan. 6, 1971, Ser. No. 104,431
Int. Cl. F16l *1/00*; B23k *21/00*; B63b *35/04*
U.S. Cl. 61—72.3 10 Claims

A technique for explosively welding conduit sections to one another to provide a conduit joint particularly amenable to underwater use through the formation of a substantially totally welded assembly. The conduit sections joined may be provided with mating frusto-conical male and female end portions to enhance the formation of a completely welded joint, and the explosive charge is preferably disposed to runout beyond the conduit portions overlapped by a surrounding collar.

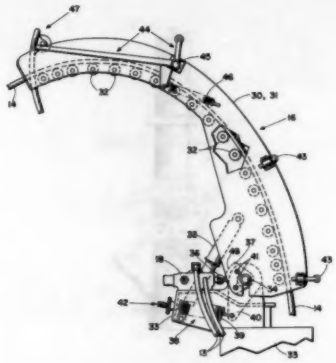
A pipeline laying operation utilizing an inclined ramp and one-pass explosive joining of conduit sections to a continuous pipeline.

3,720,070

APPARATUS AND METHOD FOR PLOWING CABLE OR PIPE

John Reginald Raves, Dollard des Ormeaux, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Calif.

Filed July 7, 1971, Ser. No. 160,417
Int. Cl. F16l *11/00*; B65h *23/20*
U.S. Cl. 61—72.6 2 Claims



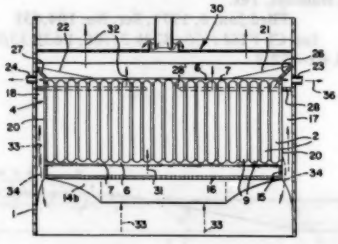
An apparatus for regulating the pay out tension of a cable passing from a cable reel into the cable chute of a cable plow. The tension in the cable deflects a cable guide which supports the cable as it passes from the cable reel into the cable chute. This deflection of the cable guide adjusts the flow of hydraulic fluid through an associated valve so as to vary the drive to a hydraulic motor which rotationally drives the cable reel.

3,720,071

HEAT EXCHANGER

Gamal El Din Nasser, Planegg, and Hans Waldmann, Wolfratshausen, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed June 15, 1970, Ser. No. 45,976
Claims priority, application Germany, June 14, 1969, P 19 30 347.0
Int. Cl. F25j *3/02*, *5/00*
U.S. Cl. 62—42 14 Claims



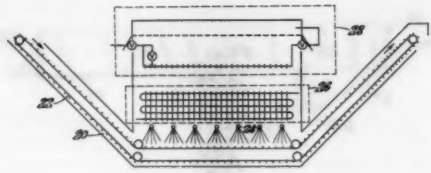
A heat exchanger, especially a condensate-evaporator or like unit for a gas-rectification column in which a prismatic heat-exchange body is surrounded by a cylindrical housing such that sectoral compartments form passages for the fluids traversing the heat exchanger body. The body of the heat exchanger consists of a stack of plate pairs, the plates of each pair being corrugated such that alignment of the corrugations produces tubes. The tubes of the stacked arrays are staggered from one array to the next and communicate via a space at the bottom of the cylinder housing, with one of the sectoral compartments. The device functionally connects but physically separates the high-pressure and low-pressure sides of a column.

3,720,072

APPARATUS FOR THE RECOVERY OF HALOCARBONS

Remo Joseph Berta, Chappaqua, and Peter Gordon Byrnes, Mahopac, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,261
Int. Cl. F17c *13/02*
U.S. Cl. 62—54 3 Claims



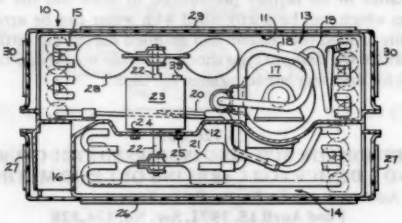
Method and apparatus are disclosed for the condensation of halocarbon vapors evolved at a heat transfer work site comprising: passing said vapors through a conventional primary condensation zone to condense the major portion of said vapors; and passing the uncondensed portion of said vapors to a secondary condensation zone in which substantially complete condensation is effected across a heat transfer barrier between said vapors and a low temperature liquified gas.

3,720,073

AIR CONDITIONER

William J. McCarty, Louisville, Ky., assignor to General Electric Company

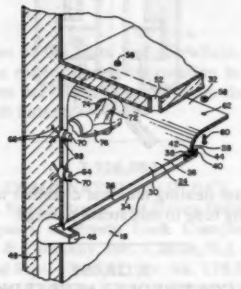
Filed July 2, 1971, Ser. No. 159,236
Int. Cl. F25b *39/04*
U.S. Cl. 62—183 2 Claims



This invention provides an improved air-conditioner. Basically, it comprises: a casing mountable in an opening into a room and having openings communicating with indoor and outdoor air; a refrigeration system mounted in the casing and including a compressor, a condenser and an evaporator interconnected in a refrigerant flow relationship; and a fan mounted in the casing for circulating outdoor air over the condenser. However, in accordance with the present invention, a multi-speed electric motor is mounted in the casing with its output shaft connected to the condenser fan. The motor has a slower first speed and a faster second speed. In particular accordance with the present invention, thermally responsive switch means are mounted on the motor for cooling by the outdoor air and have a movable switch member that will remain in a first position causing the motor to operate the condenser fan at the slower and consequently quieter first speed unless the outdoor air temperature is sufficiently high to cause the switch means to sense a temperature exceeding a first predetermined temperature. Then, the switch member will move to a second position causing the motor to operate the condenser fan at the faster and consequently louder second speed, but only until the outdoor air temperature becomes sufficiently low to cause the switch means to sense a second

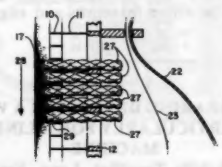
predetermined temperature that is lower than the first. Then, the switch member will return to its first position causing the motor to resume operation of the condenser fan at the slower and quieter first speed.

3,720,074
COLD PLATE AND DRAIN DESIGN
Robert J. Jansen, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 24, 1971, Ser. No. 146,237
Int. Cl. F25d *21/00*
U.S. Cl. 62—272 **9 Claims**



The invention provides a refrigerator in which a cold plate having a novel triangular configuration is disposed. A plastic drain strip is provided on the side forming the hypotenuse of the triangular shape so that a downwardly and angularly disposed drain means is provided for drainage of water from the cold plate to the rear of the refrigerator to thereby prevent the contents of the refrigerator from becoming covered with moisture. The bottom of the freezer compartment contains a drain hole which communicates with the triangular cold plate so that during defrosting any water formed thereon also runs down the cold plate and then down along the plastic drain strip. Because one of the acute angle apexes of the triangular shape is disposed at the front of the refrigerator, little obstruction is occasioned to the user of the refrigerator. The cold plate may include a right angle portion which extends substantially at a right angle relative to the triangular shape to provide additional cooling surface if this is required.

3,720,075
ABLATIVE SYSTEM
Vernon H. Gray, Bay Village, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Division of Ser. No. 47,063, June 17, 1970, Pat. No. 3,656,317. This application June 4, 1971, Ser. No. 150,215
Int. Cl. F25b *19/00*; F02k *11/02*
U.S. Cl. 62—467 **7 Claims**

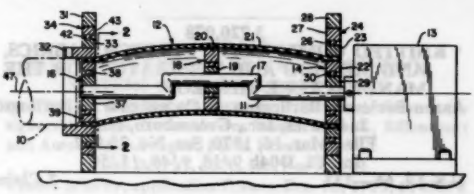


A carrier liquid containing ablative material bodies is supplied to a plenum chamber one wall of which has openings therethrough and which wall is exposed to a high temperature environment. The liquid and the bodies pass through the openings in the wall to form a self-replacing ablative surface.

In another embodiment the wall comprises honeycomb layers. Spheres containing ablative whiskers or wads, and a hardening catalyst for the carrier liquid are dispersed in the liquid.

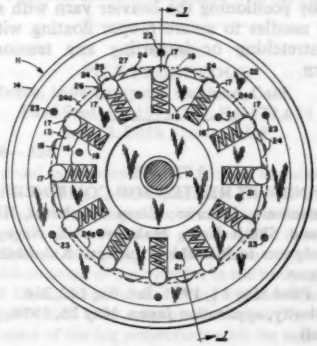
Yet another embodiment utilizes wicks woven of ablative material fibers, and extending through the openings in the wall and into the plenum chamber containing the carrier liquid.

3,720,076
CONSTANT TORQUE CLUTCHES
Robert W. Nordin, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Mar. 26, 1971, Ser. No. 128,417
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 HM **18 Claims**



A clutch disposed between an input shaft and an output shaft is designed to slip if an excessive torque load is placed on the output shaft or if excessive power is delivered to the clutch by the input shaft. The output shaft is connected positively to a flexible, deformable member or members while the input shaft delivers motion to the deformable member or members through rotation of an eccentrically disposed section of the input shaft. For transmission of motion between the input shaft and the output shaft all elements of the clutch including the flexible member rotate as a unit; however, upon encountering an excessive torque load on the output shaft, the clutch will slip as the rotating eccentric portion of the input shaft deforms the deformable member or members and thereby absorbs the excessive torque.

3,720,077
HOIST HAVING YIELDING MEANS FOR LOAD LIMITING
Harry Y. Jackson, Cherry Hill, N.J., Charles C. Walker, Forrest City, Ark., and John Ramoska, Philadelphia, Pa., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Apr. 12, 1971, Ser. No. 133,098
Int. Cl. F16d *7/00*
U.S. Cl. 64—29 **5 Claims**



A hand operated hoist has a hand wheel that is formed in parts operatively connected through spring pressed

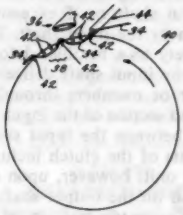
roller detents engaging detent recesses of asymmetrical shape for applying load lifting torque to the hoist. The recesses have long inclined surfaces on which the detents will ride after an overload amount of lifting torque causes the detents to leave seated position in the recesses. Thereby the detents will yield gradually while in effect releasing the load lifting effort that an operator applies to the hand wheel, but offering resistance to the operator's effort so as to reduce the hazard that would be incidental to a sudden release. The asymmetrical shape of each recess includes a steep surface that will hold a detent in the recess so as to permit an application of the amount of force necessary to release a load brake when a load is to be lowered.

3,720,078

KNITTED COMPRESSIVE STRETCH FABRICS, AND METHOD AND APPARATUS FOR THE MANUFACTURE THEREOF

Aaron Burleson, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 16, 1970, Ser. No. 20,007
Int. Cl. D04b 9/18, 9/46, 15/50
U.S. Cl. 66—133 **7 Claims**



A knitted compressive stretch fabric having a portion made of a lighter and a heavier stretch yarn wherein the lighter stretch yarn is the basic yarn in that portion and the heavier stretch yarn is arranged in pre-selected courses of the lighter yarn in said portion and in a minimally tensioned condition during knitting. Structure and manufacturing or process techniques are also provided wherein fluid under pressure, for example air, is directed at the heavier yarn, during knitting, so as to minimize the tension produced therein during knitting of that yarn into the fabric by positioning the heavier yarn with respect to the floated needles to assure proper floating without significantly stretching or imparting any tension to the heavier yarn.

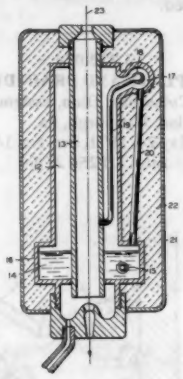
3,720,079

DRY AND WET HEATER FOR COMBINED USE

Takuma Katsumata, Inazawa; Hisao Takahashi, Higashi-ku, Nagoya, and Shinji Kato, Makagawa-ku, Nagoya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1971, Ser. No. 142,264
Claims priority, application Japan, May 25, 1970, 45/51297 (utility model)
Int. Cl. D06c 1/00
U.S. Cl. 68—6 **2 Claims**

A dry and wet heater for combined use, characterized in that said heater comprises a steam passage disposed inside a steam heating medium chamber and communicating with a steam supply source; and a pipe of a small diameter disposed



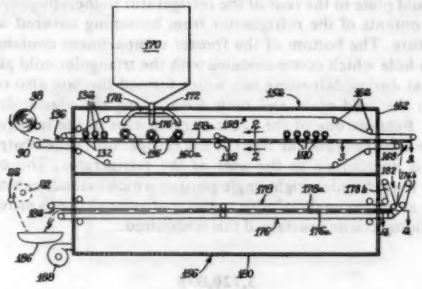
inside said steam heating medium chamber and connecting a yarn introducing tube to said steam passage.

3,720,080

CONTINUOUS LAUNDERING

Paulette Grantham, 1830 White Oak Drive, Menlo Park, Calif.

Continuation-in-part of Ser. No. 510,596, Nov. 30, 1965. This application Oct. 19, 1970, Ser. No. 81,701
Int. Cl. B05c 5/02, 9/14
U.S. Cl. 68—19.1 **6 Claims**



A washing/rinsing unit, and a drying unit, with continuous conveyor means in each unit, the laundry pieces being transferred from the washing/rinsing unit to the drying unit in a continuous operation; in one form, the laundry pieces drop by gravity into the drying unit, and in another, they are positively fed thereto. The conveyor means are of open work, enabling water and air to freely pass therethrough into the laundry pieces, and in one form of laterally spaced segments providing gaps for brushes to enter thereinto and engage the laundry pieces.

3,720,081

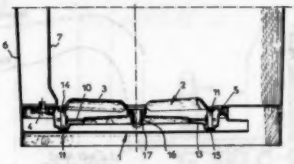
ROLLER BEARING DEVICE FOR A WASHING MACHINE, PARTICULARLY FOR A LINEN WASHING MACHINE

Maurice Marie Achille Trouilhet, Lyon, France, assignor to Calor, Lyon, France

Filed Nov. 2, 1971, Ser. No. 194,941
Claims priority, application France, July 8, 1971, 7125073
Int. Cl. D06f 7/02
U.S. Cl. 68—132 **5 Claims**

The present invention relates to a roller bearing device for a small linen washing machine. The device is constituted by a

flat ring provided at its periphery with a plurality of rollers and interposed between the linen agitating wheel and a removable plate mounted at the tub bottom of the machine. Circular guiding grooves for the rollers are provided in the mutually

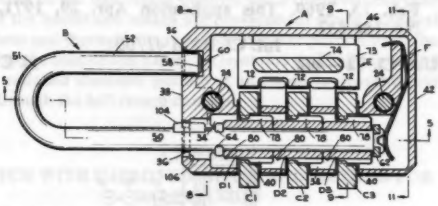


confronting faces of the plate and the wheel, the latter thus resting upon the rollers during its rotation in the tub of the machine, so as to prevent friction between the said agitating wheel and the tub bottom.

3,720,082
COMBINATION PADLOCK

Irving Feinberg, Saddle Brook, and Henry Heine, Vernon, both of N.J., assignors to Presto Lock Company, Division of Walter Kidde & Company, Inc., Clifton, N.J.

Filed Sept. 13, 1971, Ser. No. 179,753
Int. Cl. E05b *37/02*; B05b *67/22*
U.S. Cl. 70—25 **7 Claims**

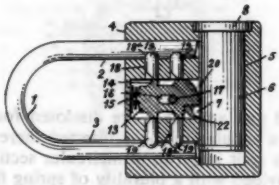


A combination padlock of the multiple dial type is constructed so that manipulation of the essential shackle enables changing or setting the combination, thereby eliminating additional elements to accomplish this function.

3,720,083
PADLOCK TYPE LOCKS

John F. Wellekens, 51 E. 42nd Street, New York, N.Y.

Filed June 11, 1971, Ser. No. 152,216
Int. Cl. E05b *67/22*
U.S. Cl. 70—38 A **4 Claims**

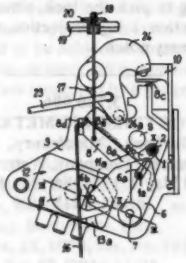


A lock of the padlock type comprising, in one embodiment of the invention, a substantially U-shaped yoke having legs provided with notches, the notched parts of the legs entering a housing which bridges the space between the legs. The housing has a cavity containing a movable, spring-biased plug that is effective when in one position, to hold locking pins in position to engage the notches in the legs. The plug when in another position permitting movement of the pins to disengage them from the notches. A lock casing fits in the housing and normally blocks movement of the plug to maintain the parts in locking position and when the lock casing is partly or completely removed from the housing it permits movement of the plug to allow shifting of the pins in order to disengage them from the notches in the legs. The lock mechanism in the lock casing includes a retractible latch engageable with the plug to hold the lock casing from withdrawal out of the housing unless a suitable key is used to retract the latch. In another embodiment of the invention, the lock casing has a part of a spline engaging one of the legs of the yoke, the spline becoming disengaged from the yoke by axial shift of the lock casing and the lock carries a latch holding the lock casing against axial movement until release of the latch by operation of a key in the lock.

3,720,084
ELECTROMAGNETIC AND MANUAL CONTROL SYSTEMS OF VEHICLE DOOR LOCKS

Pierre Ventre, and Robert Ferraris, Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Dec. 11, 1970, Ser. No. 97,243
Claims priority, application France, Dec. 16, 1969, 6943576
Int. Cl. E05b *65/36*
U.S. Cl. 70—264 **7 Claims**



This electric control device is applicable to the door locks of vehicles and comprises an electromagnetic control device having two stable positions and a reversing switch device delivering electric pulses to the electromagnetic device of all the door locks, the control lever of said reversing switch device being associated through a stud to an intermediate pivoting lever co-acting on the one hand with a pivoting locking latch connected to the electromagnetic control device and to a telltale system provided on the door, and on the other hand with a control member associated with the external key.

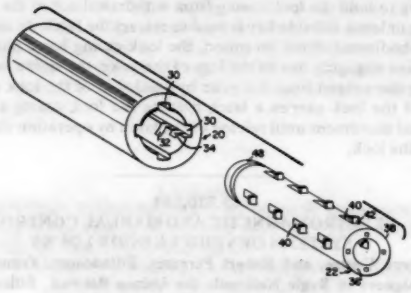
3,720,085
PICK PROOF LOCK

Mark L. Zucca, 1608 Lafayette, Oakland, Calif.

Filed Sept. 13, 1971, Ser. No. 179,674
Int. Cl. E05b *35/00, 19/08*
U.S. Cl. 70—358 **8 Claims**

A pick proof lock assembly in which an annular housing or body member having a plurality of axial grooves telescopically receives a cylinder having rows of radially extending lug projections receivable in the body grooves. The cylinder is connected to a bolt actuating mechanism in any conventional manner with rotation of the cylinder in the body effecting bolt movement for locking and unlocking a door. The cylinder is normally prevented from rotation in the body by engagement of one or more of the lug projections with the side walls of the grooves. A key is used to axially move selected ones of the key projections into alignment with transaxial peripheral notches communicating with an associated groove, and when so aligned, further key rotation will permit rotation of the

cylinder for unlocking operation. The non-selected projections will already be normally aligned with such peripheral notches. As a further feature, a plurality of short dummy peripheral notches may be provided which are normally aligned with the selected operative lug projections, such



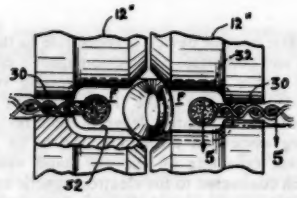
notches not being sufficiently long to permit operative cylinder rotation, but their presence is intended to thwart any person attempting to pick the lock, since such person could not ascertain whether a lug projection was aligned with an operative or a dummy notch.

3,720,086

APPARATUS FOR FINISHING METAL ZIPPER CHAIN

John Emerson Burbank, Middlebury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed May 7, 1971, Ser. No. 141,162
Int. Cl. B21h *7/00*
U.S. Cl. 72—194 **2 Claims**



Apparatus for blunting selected edges of the metal elements of a zipper chain comprises a pair of spaced toothed gears adapted to intermesh with the opposite sides respectively of fastener elements of a zipper chain moving between them.

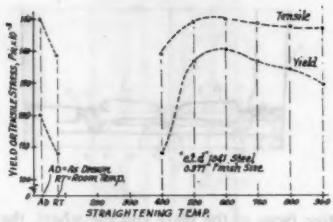
3,720,087

METALLURGICAL PROCESS OF BENDING STEEL TO DESIRED CURVATURE OR STRAIGHTNESS WHILE AVOIDING LOSSES IN STRENGTH

Rudolf W. Gottschlich, Griffith, Ind., assignor to La Salle Steel Company, Hammond, Ind.

Filed Oct. 3, 1969, Ser. No. 863,490
Int. Cl. B21d *3/00*
U.S. Cl. 72—364 **6 Claims**

A metallurgical process for bending steel bars or rods to the desired finished curvature or straightness without the normally expected losses in strength properties by bending the steel to straighten, etc., while at a temperature within the range of 300°–900° F. and preferably 400°–700° F. Steels



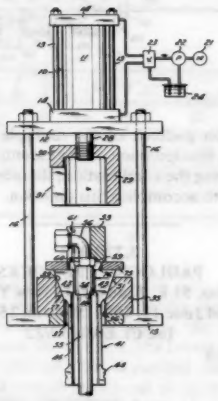
which respond to such treatment are of the type which precipitation harden in response to such bending.

3,720,088

SPLIT COLLET CRIMPER

Bruce H. Pauly, Chagrin Falls, Ohio, John Nicol, Palos Verdes Peninsula, Calif., and Karl K. Chen, Cleveland, Ohio, assignors to The Weatherhead Company

Continuation of abandoned application Ser. No. 798,972, Feb. 13, 1969. This application Apr. 29, 1971, Ser. No. 138,832
Int. Cl. B21d *41/00*
U.S. Cl. 72—402 **12 Claims**



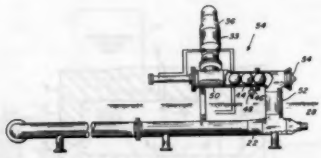
A method and apparatus are disclosed for crimping a sleeve onto a tubular member inserted therein. A spring type collet is split into two semicircular sections, each of which is provided with a plurality of spring fingers which extend axially from a base portion. The spring fingers each have an internal crimping die segment which forms a part of a circular die. An externally coned surface of the collet is forced into an internally coned socket to displace the die segments radially inwardly and crimp the sleeve. The force is applied to the collet by a cylindrical ram which is provided with a slotted side wall to receive any projecting appendage of the sleeve. The collet sections are then separated to remove the crimped sleeve.

3,720,089

DOUBLE BALL METER PROVER SYSTEM

Billy E. Davis, and Ronald G. Dunegan, both of Tulsa, Okla., assignors to Signet Controls Incorporated, Tulsa, Okla.

Filed June 16, 1971, Ser. No. 153,752
Int. Cl. G01f 25/00
U.S. Cl. 73—3 2 Claims



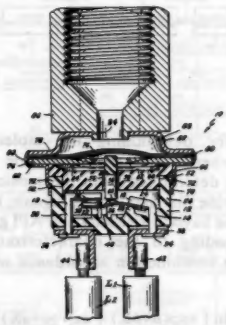
The meter prover system of this invention uses the conventional test loop of pipe, or barrel, through which a seal ball is carried by the fluid flowing through the meter and through the barrel. The seal ball in its passage through the test loop operates two spaced detectors, and the differential count of the meter during the time of passage of the ball between the two detector stations is compared to the known volume of the barrel between the detector stations. The barrel is formed in a U-shape with the inlet and outlet in relatively close proximity. A ball return conduit connects from the outlet of the barrel to the inlet so that seal balls can be recycled through the system. A portion of the ball return conduit has a diameter less than that of the barrel and means are provided for forcing the seal balls into and through this reduced diameter portion from the outlet to the inlet of the barrel. At least one seal ball remaining in the reduced diameter portion at all times, to prevent fluid flow through the ball return conduit.

3,720,090

SWITCH WITH IMPROVED MEANS AND METHOD FOR CALIBRATION

Robert T. Halpert, Providence, and Peter O. Fiore, Cumberland, both of R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 787,639, Dec. 30, 1968, Pat. No. 3,584,168. This application Feb. 9, 1971, Ser. No. 114,074
Int. Cl. G01l 27/00
U.S. Cl. 73—4 R 3 Claims



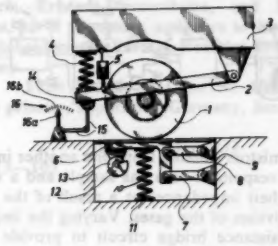
A pressure responsive device including a primary subassembly of a casing member having a cavity sealed by a snap-acting diaphragm member of either mono or bi-metal. An annular calibration-stop member is located adjacent to the diaphragm and is deformed in either of two directions to change the calibration of the diaphragm member. The device is shown operatively connected to an electric switch.

3,720,091

TESTING DEVICE FOR TESTING OSCILLATION ABSORBERS OF VEHICLES

Heinz Kiefer, Haydnstrasse 5, 776 Radolfzell, Germany

Continuation of Ser. No. 797,142, Jan. 6, 1969, abandoned. This application Jan. 11, 1971, Ser. No. 105,676
Int. Cl. G01m 17/04
U.S. Cl. 73—11 3 Claims



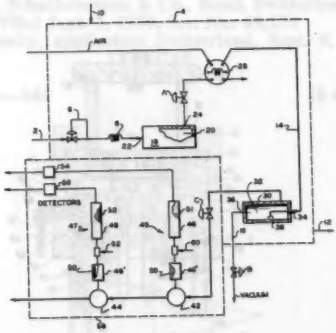
An apparatus for checking vehicle shock absorbers in installed condition which comprises vertically oscillatable plate means for receiving and supporting a vehicle wheel, said plate means being adapted to be subjected to oscillations for causing the wheel axle mass to carry out sympathetic vibrations the amplitudes of which are measured by a gauge.

3,720,092

CHROMATOGRAPHIC APPARATUS FOR ANALYZING A RICH OIL SAMPLE

Marvin E. Reinecke, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 28, 1970, Ser. No. 101,999
Int. Cl. G01n 31/08
U.S. Cl. 73—23.1 2 Claims

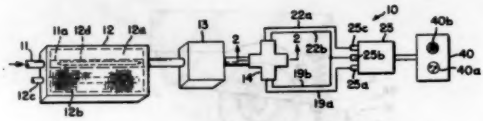


An apparatus for heating and vaporizing a rich oil sample, mixing the sample vapors, diluting the vapor sample with a diluent gas, mixing the diluted vapors sample, extracting first and second volumes of a vapor sample, and selectively extracting and passing first and second different groups of hydrocarbons from the respective first and second vapor samples to separate first and second detectors.

3,720,093
CARBON DIOXIDE INDICATING METER

George Herbert Gill, San Diego, Calif, assignor to the United States of America as represented by the Secretary of the Navy.

Filed Dec. 3, 1970, Ser. No. 94,660
Int. Cl. G01n 31/00
U.S. Cl. 73—27 R 1 Claim

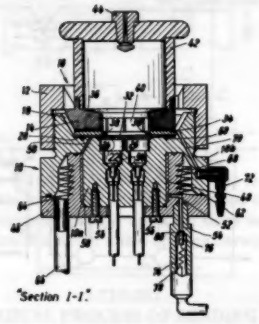


A pair of thermistors isolated from one another in a detector housing, are responsive to a gas sample and a reference sample to vary their impedances as a result of the different thermal conductivities of the gases. Varying the impedances unbalances a resistance bridge circuit to provide a signal representative of the percentage concentration of carbon dioxide in the gas sample. Humidifying the gas sample to a predetermined magnitude equaling the relative humidity of the reference gas, providing a spacious heat sink for maintaining the gas sample and reference sample at the same temperature, and providing baffles for preventing the direct impingement of the gas sample onto a thermistor greatly ensures a reliable, accurate determination of CO_2 concentration. Including operational amplifier circuits, having linear characteristics, and packaging the detector to minimize the effects of vibration and shock greatly increase reliability over contemporary devices.

3,720,094
AUTOCLAVE FOR PRESSURE JUMP RELAXATION MEASUREMENT

Wilhelm Knoche, Gottingen, Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.

Filed July 27, 1971, Ser. No. 166,490
Claims priority, application Germany, Aug. 4, 1970, G 70 29 349.1
Int. Cl. G01m 3/02
U.S. Cl. 73—37 11 Claims

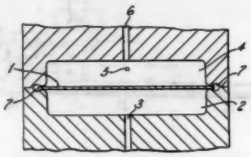


An autoclave for pressure jump measurements comprises a body affording a pressure chamber having an open top closed by a rupture disc which is pressed against the margin of the chamber by a clamping ring held by a readily releasable closure. The pressure chamber has a floor spaced from the rupture disc by a narrow gap communicating with a supply of pressure medium, the floor having in it two wells each containing a resistance cell.

3,720,095
METHOD OF TESTING CIGARETTE PAPER

Desmond Walter Molins, Deptford, London, England, assignor to Molins Organization Limited, London, England

Filed Oct. 7, 1968, Ser. No. 765,375
Claims priority, application Great Britain, Oct. 11, 1967, 46,373/67
Int. Cl. G01m 3/02
U.S. Cl. 73—38 1 Claim

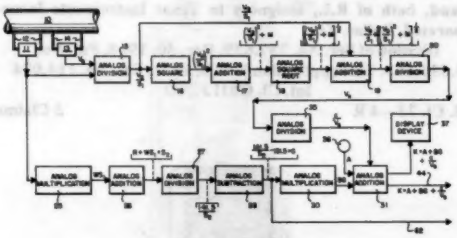


In a cigarette making system the porosity of the paper web forming the wrapper of the cigarettes is tested, for example by means of a pneumatic test device, and a signal thus obtained is fed to a cigarette inspector device which tests the cigarettes for leaks in the wrapper; the inspector device thus is compensated for variations in the paper porosity.

3,720,096
METHOD AND APPARATUS FOR MONITORING THE MOLECULAR WEIGHT OF HYDROCARBON MIXTURES

Robert A. Woodle, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,619
Int. Cl. G01n 11/00
U.S. Cl. 73—53 4 Claims



A method for determining the molecular weight of hydrocarbons wherein the Watson-Nelson characterization factor has been determined from the sensing of gravity and viscosity to provide first and second signals, respectively, corresponding to the Saybolt viscosity and API gravity and a third signal corresponding to the characterization factor. The signals are then combined in accordance with the following equation:

$$MW = \exp \ln [\exp(a+bK) + \exp(c+dK)] + m(G-30)$$

where:

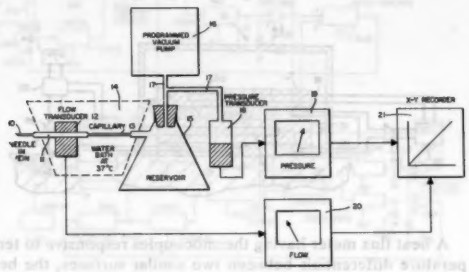
MW = the molecular weight of the hydrocarbon mixture; K = the Watson-Nelson characterization factor of the hydrocarbon mixture; G = the API gravity of the hydrocarbon mixture at 60°F; and a,b,c,d, and m are predetermined constants;

and where the abbreviations ln = natural logarithm of; exp = e raised to the power; and e is the base of the natural logarithms.

3,720,097
APPARATUS AND METHOD FOR MEASURING MAMMALIAN BLOOD VISCOSITY

Reuben E. Kron, Penn Valley, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Jan. 21, 1971, Ser. No. 108,433
Int. Cl. G01n 11/08
U.S. Cl. 73—55 5 Claims

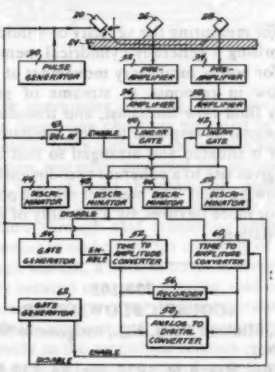


A diagnostic method and apparatus are disclosed by which instantaneous measurements are obtained which reflect the viscosity of native mammalian blood. A sample of fresh mammalian blood is taken by puncturing a blood vessel and introduced into a system including (1) a capillary calibrated to deliver 20 ml. of saline solution in one minute at −50 mm. Hg. at 37°C., (2) an electromagnetic flowmeter which senses the flow rate of the blood through the capillary, (3) a programmed vacuum pump which draws the blood sample through the capillary at a variety of pressures, and (4) recording means to instantaneously plot the resultant of the blood flow with respect to pressure variations.

3,720,098
ULTRASONIC APPARATUS AND METHOD FOR NONDESTRUCTIVELY MEASURING THE PHYSICAL PROPERTIES OF A SAMPLE

Norman E. Dixon, Pasco, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed March 22, 1971, Ser. No. 126,712
Int. Cl. G01n 29/00
U.S. Cl. 73—67.7 11 Claims

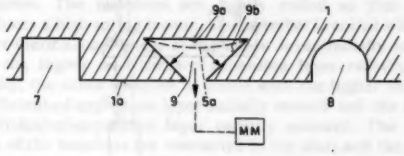


The physical properties of a sample are measured by generating a collimated beam of pulsed ultrasound and transmitting the ultrasound at an incident angle relative the sample greater than the longitudinal-ultrasonic-wave critical angle and less than the longitudinally induced-shear-ultrasonic-wave critical angle for the sample to generate simultaneously within the sample longitudinal and mode-converted-shear ultrasonic waves. The propagation of the generated longitudinal and shear ultrasonic waves through the sample is measured to provide a measure of the physical properties of the sample.

3,720,099
TESTING OF ELASTOMERIC MATERIALS

Siegfried Wolff, Bezirk Cologne; Siegfried Baumgart, Hurth Bezirk Cologne; Ulf-Erick Arnold, Hurth-Mitte; Hannelore Pohnisch, Erfstadt-Dirmerzheim, and Peter Herbrich, Cologne, all of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Filed Jan. 13, 1971, Ser. No. 106,129
Claims priority, application Germany, Jan. 15, 1970, P 20 01 613.1
Int. Cl. G01n 3/32
U.S. Cl. 73—101 7 Claims

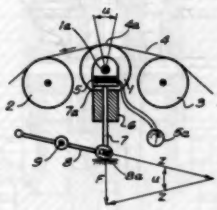


Wall means surrounds and defines an interior chamber in which a sample of vulcanized elastomer is to be accommodated. At least two separate surfaces bound this chamber and are provided with undercut grooves of dovetail-shaped cross-section in which portions of the sample are received. At least one surface can be moved with reference to the other in a sense effecting distending of the test sample.

3,720,100
APPARATUS FOR THE MEASUREMENT OF TENSILE STRESSES ON BANDS, FILAMENTS OR THE LIKE

Heinrich Grunbaum, Binningen, Switzerland, assignor to Dr. C. Schachenmann & Co., Basel, Switzerland

Filed Sept. 3, 1970, Ser. No. 69,270
Claims priority, application Switzerland, Sept. 9, 1969, 13,854/69
Int. Cl. G01l 5/04
U.S. Cl. 73—144 10 Claims



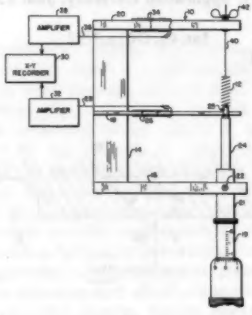
Testing apparatus for measurement of tensile stresses on elongated flexible band-like or filamentary products has two stationary guide rollers and a movable testing roller which is displaced through short distances in response to changes in tensile stresses upon the product. The product is trained over the rollers whereby the testing roller causes a transducer to produce appropriate signals whenever the testing roller changes its position in response to a change in tensile stress. The operating range of the

testing apparatus can be broadened by moving the testing roller sideways independently of the changes in tensile stress to whereby change the extent of overlap between the product and the peripheral surface of the testing roller.

3,720,101
AUTOMATIC SPRING RATE PLOTTER

Herman R. Kollmeyer, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 23, 1971, Ser. No. 165,594
Int. Cl. G01l 1/04
U.S. Cl. 73—161 **7 Claims**

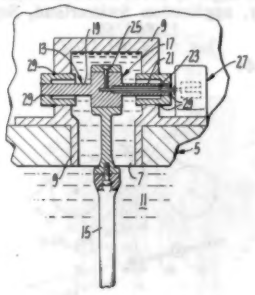


Apparatus for automatically measuring and plotting the force-deflection curve of springs, especially small springs on which forces are to be applied in order of 0.1 to 100 grams.

3,720,102
WATER SEALED BOAT SPEEDOMETER

Robert D. Ogg, Portland, Maine, assignor to The Eastern Company, Naugatuck, Conn.

Filed April 15, 1971, Ser. No. 134,204
Int. Cl. G01c 21/00
U.S. Cl. 73—186 **6 Claims**

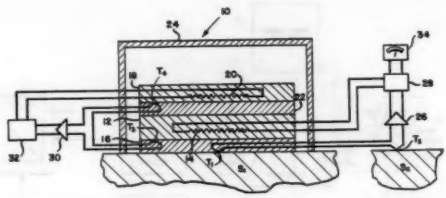


A boat speedometer of the type wherein a vane extends into the water from a torsion arm and speed is determined by the deflection of the arm, wherein the arm is at least partially hollow and the indicator mechanism is actuated by a shaft through the hollow arm. The arm is substantially surrounded by a water chamber and is supported at fixed points so that no motion is transmitted through a moving seal. This permits the torsion arm to be completely sealed to the water chamber so that the leakage problem normally associated with moveable seals is obviated.

3,720,103
HEAT FLUX MEASURING SYSTEM

Donald E. Adams, Williamsville, and Franklin A. Vassallo, Lancaster, both of N.Y., assignors to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,552
Int. Cl. G01k 17/00
U.S. Cl. 73—190 H **5 Claims**

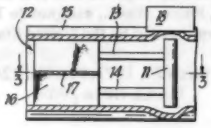


A heat flux meter having thermocouples responsive to temperature differentials between two similar surfaces, the heat flux to one of which is to be determined, a first heater responsive to the thermocouples for heating the other surface, a second heater responsive to temperature differences between it and the first heater to prevent heat flow away from the other surface and a reflective shield for preventing environmental heat flow to the other surface.

3,720,104
FLOWMETERS

Klaus Joachim Zanker, Streatley, Bedfordshire, England, assignor to Kent Instruments Limited, Luton, England

Filed Aug. 17, 1970, Ser. No. 64,365
Claims priority, application Great Britain, Aug. 20, 1969, 41,629/69
Int. Cl. G01f 1/00; G01p 5/00
U.S. Cl. 73—194 B **5 Claims**



A device for measuring the velocity of a fluid flowing along a duct comprising a generally cylindrical member positioned in the duct for bodily oscillatory movement at right angles to the fluid flow in response to streams of periodic eddies generated by fluid flow therepast, and transducer means for providing a signal in response to such oscillatory movement. The member is situated and arranged so that the bodily motion thereof gives rise to a coherent two-dimensional eddy pattern in the flowing fluid. The member may be positioned in the duct by one or more flexures, by a plurality of springs, or by a magnetic levitation.

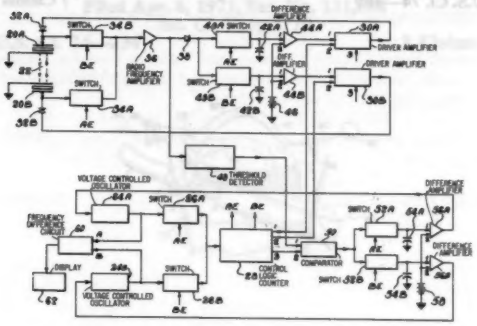
3,720,105
ACOUSTIC FLOWMETER

Uldis Cirulis, Midland Park, N.J., assignor to NU Sonics, Inc., Paramus, N.J.

Filed March 24, 1971, Ser. No. 127,551
Int. Cl. G01f 1/00
U.S. Cl. 73—194 A **6 Claims**

An acoustic flowmeter for measuring the flow of fluid in a pipe having a pair of transducers mounted on the pipe opposite each other with one downstream from the other, an oscillator associated with each transducer, the transducers

sharing time so that each is used in the transmit mode and the receive mode to use the same acoustic path and thereby eliminate the variables due to the use of different paths, means for controlling the amplitude of the excitation applied to the



transmit mode transducer and means for controlling the frequency of the oscillators, and means for obtaining the difference between the two oscillator frequencies which frequency is a function of the velocity of flow of the fluid in the pipe.

3,720,106

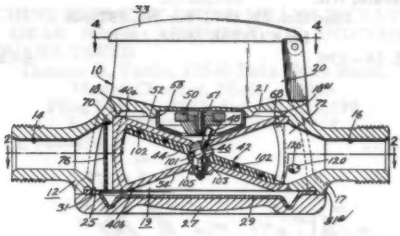
FLUID METER

Andrew Varga, 1603 E. Cardeza St., Philadelphia, Pa.

Division of Ser. No. 663,265, Aug. 25, 1967, Pat. No. 3,564,919. This application Feb. 16, 1971, Ser. No. 115,226

Int. Cl. G01f *15/14*

U.S. Cl. 73—273 **4 Claims**



A fluid meter comprising a casing, a measuring chamber unit defining a measuring chamber mounted in said casing, fluid inlet and outlet ports communicating with said measuring chamber, a piston assembly mounted for movement in said chamber upon flow of fluid therethrough, indicator means operatively connected to said piston assembly to indicate at least rate of flow through said measuring chamber, means defining an opening in said casing for assembly of said measuring chamber unit therein, a bottom cover member including a seal detachably secured over said opening, said casing including a circumferentially extending rib spaced inwardly from the outer edge defining said opening, said edge projecting beyond said rib to provide in the assembled relation contact between said cover and edge and engagement of said rib with said seal, and said casing constructed without internal protuberances thereby allowing unobstructed fluid flow about the measuring chamber and wherein the centerline of the inlet and outlet ports are aligned with a plane through the center of the measuring chamber to minimize pressure drop across the fluid meter.

3,720,107

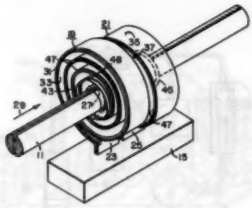
TEMPERATURE RESPONSIVE ACTUATION

Basil S. Shepard, Greenbelt, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1971, Ser. No. 167,937

Int. Cl. G01k *5/70*

U.S. Cl. 73—363.7 **8 Claims**



There is disclosed an actuator having a shaft which, responsive to temperature changes, is rotated by bi-metallic coiled members. The members are tightly coiled so that each produces a high spring torque. One member is coiled with the lower-thermal-coefficient-of-expansion layer radially inward and the higher coefficient-of-expansion layer radially outwardly; the other member is coiled with the higher thermal coefficient-of-expansion layer radially inward and the lower coefficient-of-expansion layer radially outward. The inner ends of the members are connected to the shaft and the outer ends to a fixed support; the members being positioned about the shaft with their coils wound oppositely so that the spring torques of the members counteract at any temperature but the torques produced by change in temperature act cumulatively.

3,720,108

DIFFERENTIAL PRESSURE MEASURING MECHANISM

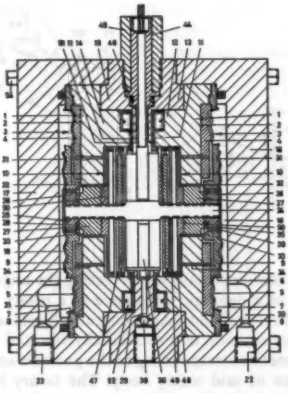
Edmund Freitag, Tillystrasse 1, Minden, Westphalia, Germany

Filed Feb. 24, 1971, Ser. No. 118,350

Claims priority, application Germany, Feb. 26, 1970, P 20 09 043.1

Int. Cl. G01l *9/10*

U.S. Cl. 73—398 R **11 Claims**

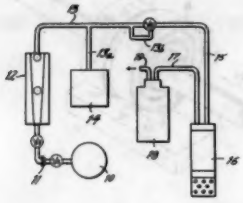


Mechanism is symmetrical on each side of a middle plate provided with opening therethrough containing electrical inductive pickup responsive to position of a rod carrying rigid inner part of measuring membranes on each end. Membrane sockets over the opening provide a chamber enclosing pickup and filled with liquid. Compensating membranes allow for thermal expansion of liquid.

3,720,109
FLUID-OPERATED SAMPLER AND FLOWMETER

Robert M. Blechman, Honey Brook Township, Chester County, Pa., assignor to Pro-Tech, Inc., Malvern, Pa.

Filed May 3, 1971, Ser. No. 139,759
Int. Cl. G01n 1/14
U.S. Cl. 73—421 B 11 Claims

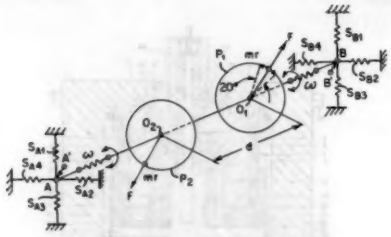


Sampling apparatus is operated by continuous flow of fluid from a pressurized source through a regulating valve and a flowmeter having dual floats. At intervals determined by the flow rate a pressure-sensitive valve releases accumulated fluid to propel sampled medium from a sample intake to a collection location. Principal uses are in stream monitoring for pollution control, sewage treatment facilities, and industrial waste reduction programs.

3,720,110
METHOD AND APPARATUS FOR DETECTING ANGULAR POSITION AND AMOUNT OF DYNAMIC UNBALANCE OF ROTATING BODY

Hirosi Sakuraba, Kanagawa-ken, Japan, assignor to International Mechanical Vibration Laboratory, Inc., Osaka-shi, Osaka, Japan

Filed Aug. 13, 1971, Ser. No. 171,460
Int. Cl. G01m 1/16
U.S. Cl. 73—460 8 Claims

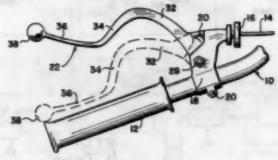


A method and apparatus for detecting the angular position and amount of a dynamic unbalance of a rotary body by detecting the direction and magnitude of a displacement of the normal axis of rotation of a rotationally vibrated rotary body, the displacement corresponding to the position and amount of the unbalance of said rotary body. The rotary body is rotationally vibrated within a minute angular range around its own normal axis of rotation and is resiliently supported to two spaced points along said axis so that it may be displaced in a plane perpendicular to said axis. As a result, said normal axis of rotation of the rotary body is displaced as a function of the angular position and amount of the unbalance of the rotary body. The magnitude and direction of the displacement are detected, whereby the angular position and amount of the dynamic unbalance of the rotary body are detected.

3,720,111
LEVER FOR BRAKE AND CLUTCH OPERATION ON CYCLE HANDLEBARS

Glen B. Guyton, 3401 E. Newton, Tulsa, Okla.

Filed June 4, 1971, Ser. No. 150,137
Int. Cl. G05g 11/00
U.S. Cl. 74—489 7 Claims

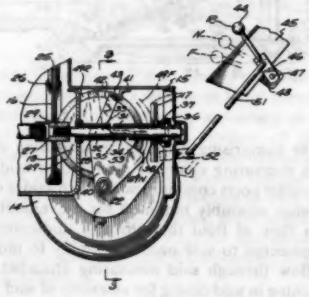


A lever for hand operation of the brakes and clutch from the handlebars of a cycle, wherein said lever is of a configuration for avoiding engagement with the fingers of the hand when the brakes or clutch members are actuated by depressing of the lever against the handlebars. The lever is particularly designed and constructed for ease of use during actuation of the brakes or clutch, but provides a sufficient clearance between the lever itself and the forefinger of the hand in the depressed position of the lever for precluding pinching or squeezing of the finger against the handlebars, thus improving the operating efficiency of the cycle.

3,720,112
LOAD LIMITER FOR SELF-ENERGIZING DRIVE

Edward W. Enters, Fredonia, and Warren H. Price, Sheboygan, both of Wis., assignors to Gilson Bros. Co., Plymouth, Wis.

Filed Oct. 22, 1971, Ser. No. 191,646
Int. Cl. F16h 15/08, 13/02
U.S. Cl. 74—196 4 Claims

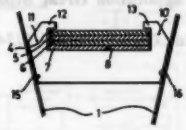


A load limiter for a self-energizing drive mechanism which has a rotating disk, a wheel driven therefrom and a swing mechanism on which the wheel is swung toward and away from the disk, said limiter comprising stop means for limiting swinging motion of the swing mechanism toward the disk and yieldable spring biased mounting means for the disk on which the disk will yield prior to engagement of the stop means, whereby the pressure between the wheel and disk is limited to the spring bias of the disk mounting means.

3,720,113
FLEXIBLE CONTINUOUS POWER TRANSMISSION MEANS

Hubertus Josephus van Doorne, Deurne, and Hemmo Hermannes Johannes Ludoph, Heeze, Netherlands; said Ludoph assignor to said Van Doorne, Doornehof, Deurne, Netherlands

Filed Apr. 6, 1971, Ser. No. 131,594
Int. Cl. F16g 5/10
U.S. Cl. 74—236 3 Claims

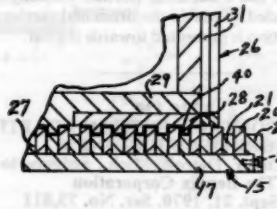


A flexible continuous transmission means for transferring torque between V-shaped discs wherein a predetermined number of metallic strips is provided along which a plurality of V-shaped members can shift in a longitudinal direction. The V-shaped members link up and extend around the total circumference of the strips, and are blocks made of a non-compressible material, such as metal. In this way the torque is substantially transmitted by the compressive stress through the V-shaped blocks. The V-shaped blocks are so shaped that they can tilt with respect to each other when they are entrained around a disc and the diameter of the tilting line is smaller than that diameter of the innermost metallic strip.

3,720,114
MACHINE ELEMENT DRIVE MEANS INCLUDING A GEAR RACK ASSEMBLY OF INDIVIDUAL SQUARE TEETH

Thomas D. Vertin, 37540 Lake Shore Road, Mount Clemens, Mich. 48043

Filed Feb. 16, 1971, Ser. No. 115,598
Int. Cl. F16h 1/18, 1/04, 55/08
U.S. Cl. 74—424.6 21 Claims

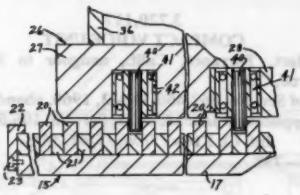


A machine element drive means for moving one machine element, as a column, relative to another machine element, as a base, including a gear rack means on one of said machine elements and a rotatable drive worm on the other of said machine elements in driving engagement with the gear rack means, whereby when said drive worm is rotated, a relative movement between the machine elements is produced. The gear rack means is formed from a plurality of individual square teeth.

3,720,115
MACHINE ELEMENT DRIVE MEANS

Thomas D. Vertin, 37540 Lake Shore Rd., Mount Clemens, Mich.

Filed Feb. 16, 1971, Ser. No. 115,586
Int. Cl. F16h 1/18, 1/04, 55/18
U.S. Cl. 74—424.6 40 Claims

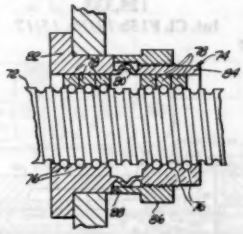


A machine element drive means for moving one machine element, as a column, relative to another machine element, as a base, including a gear rack means on one of said machine elements and a rotatable drive worm on the other of said machine elements in driving engagement with the gear rack means, whereby when said drive worm is rotated, a relative movement between the machine elements is produced. The gear rack means may be provided with square teeth and the drive gear worm with teeth formed from a plurality of rotatably mounted studs, or the gear rack may have teeth formed from a plurality of rotatably mounted studs and the drive worm be provided with square teeth.

3,720,116
ARRANGEMENT FOR PRELOADING BALL SCREW ASSEMBLIES & METHOD OF MANUFACTURE OF THE BALL SCREW NUT THEREFOR

Bernard R. Better, Chicago; Joseph W. Kosinski, Riverside, and Edward Hain, Chicago, all of Ill., assignors to The Bendix Corporation

Filed March 23, 1971, Ser. No. 127,212
Int. Cl. F16h 55/22, 55/18
U.S. Cl. 74—459 13 Claims



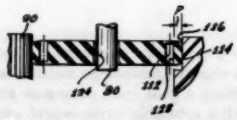
A method and arrangement for preloading ball screw assemblies in which a ball screw nut having an axially and resiliently deformable intermediate section integral therewith is utilized which is rigid in torsion and shear, with an arrangement for axially spreading the nut portions connected by the deformable section and securely positioning the portions in their separated position by means of variable width spacers to thereby vary the preload. The method of preloading includes the step of deforming an intermediate portion of the nut so as

to cause axial separation of the connected portions thereof and securing the portions in their separate position to create the nut preload. The method of manufacture consists of first machining the screw thread, and other geometry into the nut blank, and then machining an intermediate section so as to render the section axially deformable to provide accurately matched nut portions which are relatively movable axially, but securely located with respect to each other radially and angularly.

3,720,117
COMPACT VOICE UNIT

William Hart, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 863,450, Oct. 3, 1969, abandoned. This application Jan. 14, 1971, Ser. No. 106,547
Int. Cl. F16h *13/06, 15/68, 55/34*
U.S. Cl. 74—798 **5 Claims**

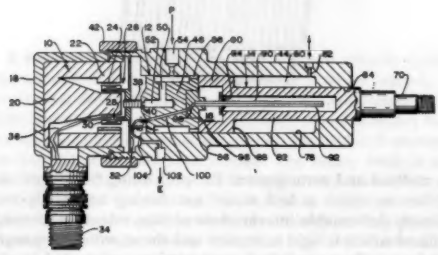


A compact and simplified toy phonograph of a type which includes a constant force spring that drives a record turntable, the turntable driving a governor through a planetary drive. The planetary drive includes three planetary discs of elastomeric material, each disc having slots arranged in a circle near its rim to increase its flexibility, to thereby allow greater production tolerances in producing the drive. The spring has a coiled inner portion which is held in a small chamber in the unit housing, to eliminate the need for a pivotally mounted spring-holding hub. The outer end of the spring is attached to the turntable by a tab formed in the spring which is firmly captured by a protuberance on a pair of walls of the turntable.

3,720,118
INTEGRATED SERVO ACTUATOR

Joseph McCormic, Pawling, N.Y., assignor to Delta Hydraulics, Inc., Braintree, Mass.

Continuation of Ser. No. 808,749, March 20, 1969, abandoned. This application March 17, 1971, Ser. No. 125,333
Int. Cl. F15b *13/16, 15/17*
U.S. Cl. 91—47 **9 Claims**

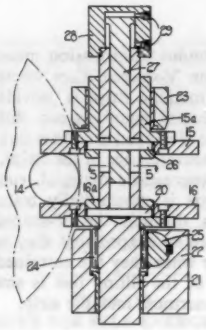


An integrated servo actuator including in a single package a force motor, a fluid modulator controlled directly by the force motor, and an actuator movable in response to the characteristic flow of fluid through the modulator. An integral potentiometer mounted in the housing produces a signal which is a function of the actuator position.

3,720,119
MECHANISM FOR FEEDING BAR STOCK TO A MULTI-SPINDLE LATHE

Harold James Gilbert, Coventry, and Norman Yearsley, Kenilworth, both of England, assignors to Wickman Machine Tool Sales Limited, Coventry, England

Filed July 27, 1971, Ser. No. 166,466
Claims priority, application Great Britain, Aug. 1, 1970, 37,271/70
Int. Cl. B23b *13/00, 3/34*
U.S. Cl. 82—2.7 R **7 Claims**



Mechanism for feeding bar stock to a multi-spindle lathe in which a plurality of rotatable spindles provided respectively with collets for gripping the stock are equiangularly mounted within a drum which is intermittently rotated through an angle equal to the angular spacing of the spindles in the drum. The feed member is adapted to make frictional contact with a stock bar to feed it through the collet whilst the drum is stationary, and is rotatable about an axis extending tangentially to a circle described about the axis of rotation to the drum. The feed member has a cut away portion whereby sufficient clearance is provided to enable the drum and carrier to rotate when the said portion is presented towards the bar.

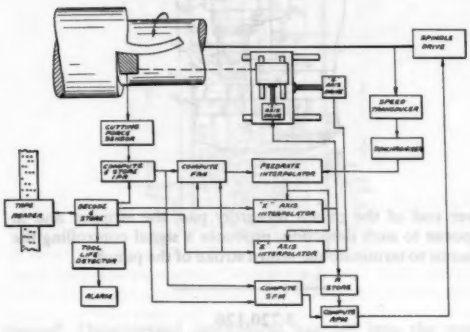
3,720,120
NUMERICAL CONTROL SYSTEM ADAPTIVE TO WORKPIECE HARDNESS

Hymie Cutler, Detroit, Mich., assignor to The Bendix Corporation

Filed Sept. 21, 1970, Ser. No. 73,811
Int. Cl. B23b *7/00*
U.S. Cl. 82—2 B **13 Claims**

A stored program computer uses input numerical information to control the path of motion of a lathe cutter relative to the lathe spindle. The system also controls the rate of motion of the cutter along its path and the rate of rotation of the spindle in such a way as to attain a predetermined useful cutter life and a maximum volume of metal removal by the cutter during that life. The force exerted by the cutter on the workpiece is measured by a transducer to produce a signal which is operated upon in connection with information on the tape

to produce an inches-per-revolution number. This number is multiplied by a number derived from a spindle speed transducer to develop a feedrate number to control the rate of operation of interpolators which generate control signals for the two mutually perpendicular cutter



drive axes. The inches-per-revolution number is also operated upon by information obtained from the tape and a number proportional to the normal distance between the cutter and the spindle axis to develop a drive signal for the spindle.

3,720,121

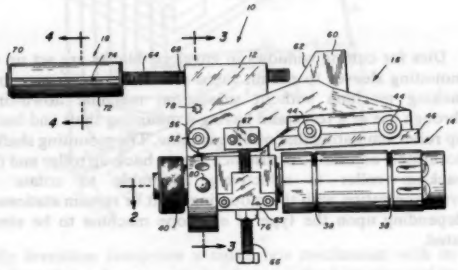
FIBERGLASS PIPE WORKING TOOL

Rudolph G. Foss, Tulsa, Okla., assignor to Unique Industries, Inc., Tulsa, Okla.

Filed Feb. 10, 1971, Ser. No. 114,191

Int. Cl. B23b *5/16*

U.S. Cl. 82—4 C **4 Claims**



A tool for putting a male taper on the end of a length of pipe includes a supporting member which rotatably carries an expandable collet and pivotally carries a cutter blade assembly having a cutter blade thereof extending directly above the expandable collet. A combination handle and blade advancer is utilized to rotate the cutter blade relative to a length of pipe received over the collet and at preselected intervals to advance the blade onto the outer wall of the pipe to obtain the desired angle and length of taper.

3,720,122

APPARATUS TO CONTROL THE CUTTING DEPTH MADE IN A WORKPIECE BY A CUTTING MACHINE

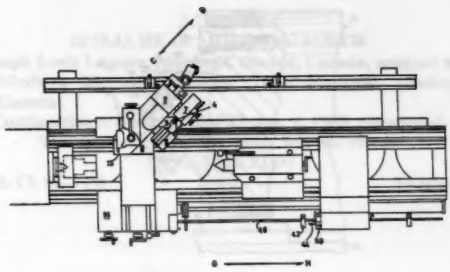
Gonzalo R. Mendoza, Avenida Alemania No. 376, Guadalajara, Mexico

Filed July 20, 1971, Ser. No. 164,400

Claims priority, application Mexico, Aug. 12, 1970, 124473

Int. Cl. B23b *21/00*

U.S. Cl. 82—24 R **5 Claims**



In a cutting machine having a cutting tool movable toward and away from a workpiece, an apparatus for automatically changing the depth of cut made by the tool in the workpiece in successive movements of the tool towards the workpiece.

3,720,123

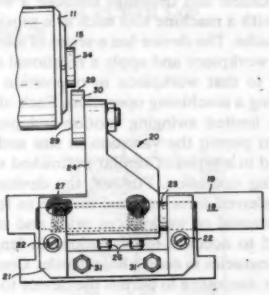
FACING STOP SYSTEM

Josef Eichenhofer, Brampton, Ontario, Canada, assignor to Automatic Bar Feed Ltd., Downsview, Ontario, Canada

Filed Aug. 13, 1971, Ser. No. 171,538

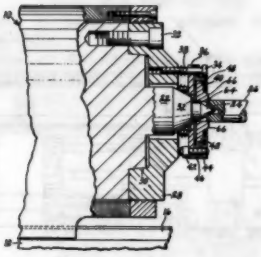
Int. Cl. B23b *3/36, 3/34*

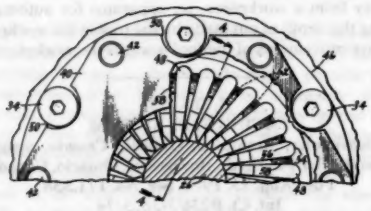
U.S. Cl. 82—34 A **16 Claims**



A facing stop system for a multi-spindle screw machine ejects bar remnants and stops a replenishment bar in position for facing off. It includes a stop member supported for movement axially and transversely of the bar and urged transversely into the path of the bar and toward the spindle. The support for the stop member is secured to the inward facing edge of the cross-slide associated with the feed spindle to be clear of the tool-mounting region of the cross-slide. The stop member is normally closer to the spindle than the end of a faced bar being indexed to the feed station, so that a faced bar moves the stop aside during the feed cycle, and the stop pivots upward to eject a bar remnant fed out of the spindle and to intercept a replenishment bar in proper position for facing off.

3,720,124
ROTARY WORK DRIVER FOR MACHINE TOOLS
Carl W. Kaesemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed May 20, 1971, Ser. No. 145,293
Int. Cl. B23b *33/00*
U.S. Cl. 82—40 **2 Claims**

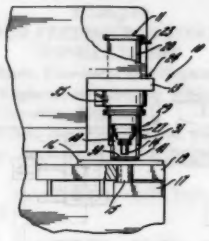




This specification and drawings disclose a work driver in combination with a machine tool such as a precision grinding machine or a lathe. The device has a series of tooth-like sprags to surround a workpiece and apply a rotational drive force in one direction to that workpiece in opposition to the force produced during a machining operation. Each of the sprags is movable in a limited swinging motion independent of the other sprags to permit the variation in size and eccentricity normally found in a series of similar unfinished workpieces in a manufacturing operation. Further, the device is shown to have in its preferred form an axial motion to facilitate positioning and removal of workpieces prior and subsequent to machining and to account for variations in length of workpiece and inaccuracies in center hole depths. Controls are also included in the disclosure to permit the device to be used with an automatic machine.

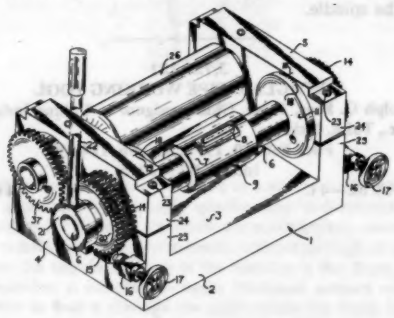
3,720,125
ADJUSTABLE STRIPPER WITH STROKE CONTROL
William B. Scott, 650 Race Street, Rockford, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.
Filed Aug. 2, 1971, Ser. No. 168,099
Int. Cl. B26d *7/26*; B26f *1/02*
U.S. Cl. 83—146 **3 Claims**

A punch press includes a fluid actuator operable to reciprocate a punch through advance and return strokes relative to a die to punch holes in an intervening workpiece. A stripper is supported by the press to prevent upward movement of the workpiece on the return stroke of the punch and is adjustable vertically relative to the die to accommodate different thicknesses of workpieces. A proximity detector carried by and adjustable with the stripper detects the return of the



lower end of the punch upwardly past the stripper and in response to such detection, produces a signal controlling the actuator to terminate the return stroke of the punch.

3,720,126
DIE TEST STAND
Richard Kranz, Shawnee Mission, Kans., assignor to Tension Envelope Corporation, Kansas City, Mo.
Filed Dec. 11, 1970, Ser. No. 97,121
Int. Cl. B23d *25/02*; B26f *1/08*
U.S. Cl. 83—344 **3 Claims**

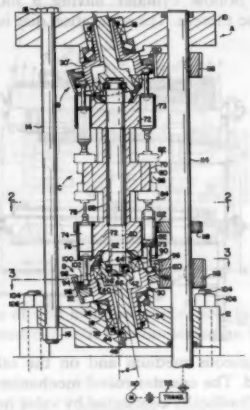


Dies for cutting windows in envelope blanks are set up on mounting sleeves to permit rapid placement in an envelope making machine without substantial machine down-time through use of a test stand having a mounting shaft and back-up roller simulating that of the machine. The mounting shaft is accurately adjustable in distance from a back-up roller and the back-up roller is selectively adaptable to rotate in synchronization with the mounting shaft or remain stationary depending upon the type of envelope machine to be simulated.

3,720,127
METHOD AND APPARATUS FOR PRESS WORKING
Anatol Michelson, Swarthmore, Pa., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.
Filed May 14, 1971, Ser. No. 143,582
Int. Cl. B26d *5/08*
U.S. Cl. 83—550 **11 Claims**

A method and apparatus for successively performing a press-type operation of a plurality of workpieces located in work stations which are arranged in a circle. Tool

means rotatable in unison with the work stations are forcibly reciprocated by drive means into and out of engagement with the work stations during each revolution



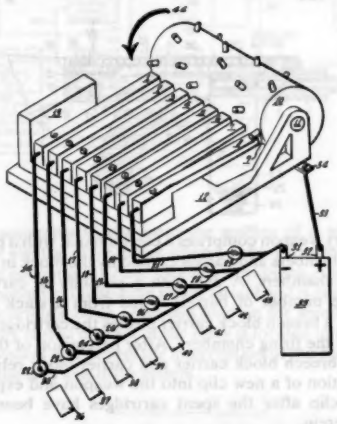
thereof. Unprocessed workpieces are fed into the work stations as the processed workpieces are removed therefrom during each revolution.

3,720,128

TONE INDICATING MUSIC BOX AND ITS APPLICATION TO A MUSIC INSTRUMENT

Eugene P. Frank, 350 East St. James St., San Jose, Calif.

Filed Dec. 30, 1971, Ser. No. 214,094
Int. Cl. G10f *1/06*; A63j *17/00*
U.S. Cl. 84—94 **2 Claims**



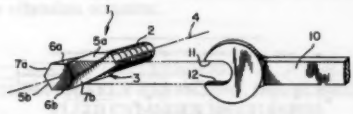
My invention comprises a music box mechanism with its metal revolving drum studded with metal plucking pins and its metal tone producing reeds, but where each of the tone producing reeds is electrically isolated from each other and from the electrical ground. The other working parts, including the plucking pins and revolving drum, are part of the electrical ground, and continuity exists and only exists between a tone producing metal keep and the electrical ground when the reed is in the process of being plucked by a metal plucking pin of said ground potential. To each key (or other point of actuation) of a music instrument (such as a toy piano) is placed a light bulb wired in series with the metal reed (or switch) producing the same tone when plucked as the key of the music instrument, when struck. The other connection of all the light bulbs is connected to one side of a battery, and the other side of the battery (or other voltage source) is connected to the electrical ground. Thus, as the music box plays, a child may accompany, (on a toy piano) the music boxes tune correctly by stricking only those keys hearolded (or signaled) by a blinking light. As each lights blinks over a given key (of a toy piano) just before the corresponding metal reed in the music box sounds, (this being the point when the plucking pin is in the process of plucking) there is even some allowance of time for the childs reflexes in his responding to the light signal.

3,720,129

SPIRAL HEAD ADJUSTING SCREW

Joseph Louis Lagasse, Montreal, Quebec, Canada, assignor to Northern Electric Company, Ltd., Montreal, Quebec, Canada

Continuation of Ser. No. 790,023, Jan. 9, 1969, abandoned. This application Dec. 18, 1970, Ser. No. 99,639
Int. Cl. F16b *23/00*
U.S. Cl. 85—9 R **3 Claims**



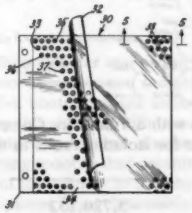
A fastener element has a wrench engaging portion provided with wrench engaging surfaces having a helical configuration about the rotational axis of the fastener element.

3,720,130

CHATTERLESS PHOTO ALBUM PAGE

Sheldon Holson, Norwalk, Conn., assignor to The Holson Company, Wilton, Conn.

Continuation-in-part of Ser. No. 824,171, May 13, 1969, abandoned. This application Jan. 15, 1971, Ser. No. 106,880
Int. Cl. B42f *5/00*
U.S. Cl. 40—104.18 **2 Claims**



A photographic album page of the type comprising a relatively opaque center lamina having exposed adhesively coated surfaces, and a pair of transparent overlay members adapted to be selectively adhered thereto on the inner surface, photographic prints being positionable therebetween to be retained by such adherence. The adhesive is applied to the surfaces in such a manner as to be discontinuous in circular areas of critical sizes and interstitial distance, whereby when the transparent overlay is peeled, no chattering occurs.

3,720,131

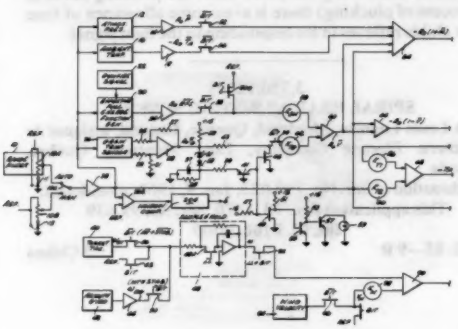
BUILT-IN TEST FOR TANK FIRE CONTROL COMPUTER

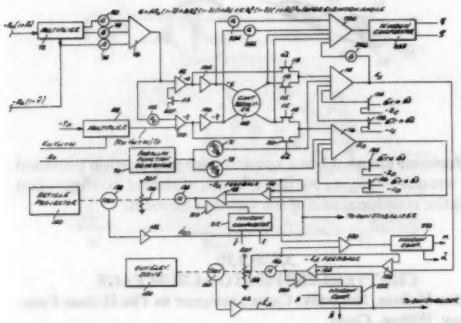
Millard M. Frohock, Jr., Thousand Oaks; Michael A. Riley, and William E. French, both of Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

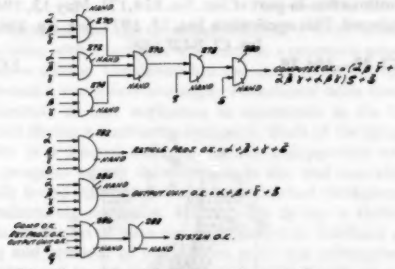
Filed Jan. 28, 1971, Ser. No. 110,572

Int. Cl. F41f *25/00*

U.S. Cl. 89—41 ME 10 Claims







In combination with a Tank Fire Control Computer, comparators and logic for isolating faults in the system to a particular unit.

3,720,132

BARREL MOVING DEVICE FOR GUNS

Karl-Josef Wiemers, Dusseldorf, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

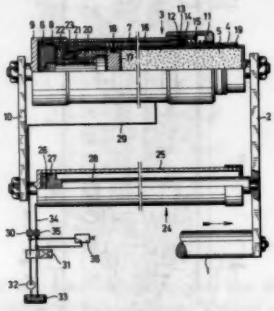
Filed Dec. 16, 1970, Ser. No. 98,731

Claims priority, application Germany, Dec. 24, 1969, P 19 64 896.5

Int. Cl. F41f *19/14*

U.S. Cl. 89—43 R 5 Claims

A barrel moving device for guns, moving the guns and a barrel relative to each other, which comprises two members constituting a hydropneumatic counter-recoil mechanism and a hydraulic barrel mover. The members comprise cylinders effective in the same direction, and a piston and a piston rod rigidly connected therewith. A beam body is provided and the piston reciprocates in the cylinders. The latter are secured to the beam body. A part connects the counter-recoil mechanism with the gun. The piston rod is connected with the part and comprises a hollow cylinder having a movably mounted separation disc therein. The separation disc is charged on one



side with a gaseous medium and on the other side with a hydraulic fluid. The counter-recoil mechanism and the barrel mover are hydraulically connected by valve means, and a first conduit leads to the cylinder of the barrel mover, a second conduit leads to the cylinder of the counter-recoil mechanism, and the conduits include each a shut-off valve for closing the conduits.

3,720,133

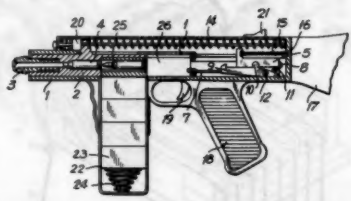
INFANTRY WEAPON ADAPTED TO FIRE A PLURALITY OF CARTRIDGES SIMULTANEOUSLY

Pierre Jampy, 5, rue Pauphile; Henri Bouix, Cote du Monteil, and Rene Armand, 22, rue Georges Thyvent, all of Tulle, France

Filed Aug. 26, 1970, Ser. No. 67,096

Int. Cl. F41d *9/00*

U.S. Cl. 89—126 2 Claims



An infantry weapon comprises a carrier block with a plurality of firing chambers and barrels carried by the block in extension of the chambers. A clip with a plurality of cartridges equal to the number of barrels is fed from a stack in the weapon and a breech block carrier pushes the cartridges from the clip into the firing chambers. After percussion of the cartridges, the breech block carrier and carrier block retract to enable insertion of a new clip into the weapon and expulsion of the old clip after the spent cartridges have been reintroduced therein.

3,720,134

CONTROL SYSTEM FOR MACHINE TOOL MEMBERS

Jaromir Zeleny, Prague, Czechoslovakia, assignor to Vyzkumny ustav obrabecich stoju a abrabeni, Prague, Czechoslovakia

Filed March 3, 1970, Ser. No. 16,092

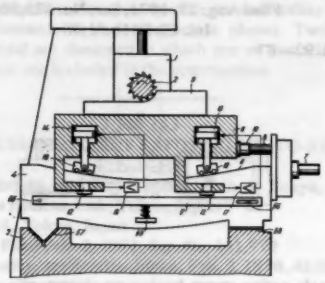
Claims priority, application Czechoslovakia, March 6, 1969, 1646/69

Int. Cl. B23b *9/00*, *17/00*

U.S. Cl. 90—11 R 19 Claims

A control system for positioning relatively movable machine tool members comprising a templet secured to one of said machine members, a servo indicator secured to the other

of said members and adapted to engage the templet to produce a signal indicative of the direction and degree of deviation between said members, a servomotor position in

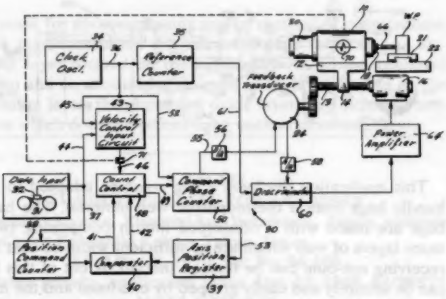


contact with one of said members responsive to said signal to reposition said member until full compensation for said deviation is effected.

3,720,135
FEED RATE CONTROLLER

Kenneth R. Merner, and Richard E. Stobbe, both of Greendale, Wis., assignors to Kearney & Trecker Corp., West Allis, Wis.

Filed Feb. 1, 1971, Ser. No. 111,326
Int. Cl. B23b *47/24*
U.S. Cl. 90—14 **4 Claims**



An apparatus to eliminate the stalling of a machine tool spindle electric drive motor when a cutting tool secured in the spindle encounters a hard spot in a workpiece. A current relay is connected in the spindle motor circuit and is energized upon the occurrence of an abnormal load on the spindle motor. A normally closed contact of the relay is located in the feed axis drive system and effects the interruption of the command pulses to the feed axis drive system.

ERRATUM

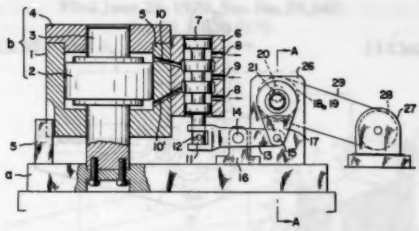
For Class 91—47 see:
Patent No. 3,720,118

3,720,136
VIBRATING TABLE

Jiro Uchida and Minoru Osugi, Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sept. 23, 1970, Ser. No. 74,693
Int. Cl. F15b *21/02*; F01b *15/00*
U.S. Cl. 91—35 **5 Claims**

The present invention relates to a vibrating table comprising an eccentric rotatable shaft driven by a prime mover, a spool of a servo valve which is reciprocated by a mechanism for converting the rotation of said eccentric shaft into reciprocal action, means for alternately switch-

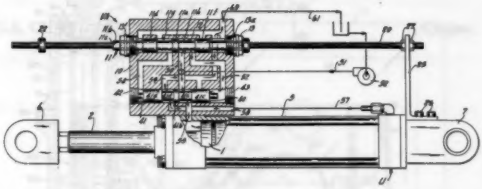


ing the rotation of said eccentric shaft and the reciprocating movement of the spool of the servo valve causing alternate switching of the outlet and inlet of a pressurized fluid to vibration actuator.

3,720,137
AUTOMATICALLY REVERSING, DOUBLE ACTING FLUID CYLINDER MECHANISM

Lawrence R. Landherr, Racine, and Karl J. Prohaska, Pewaukee, both of Wis., assignors to Milwaukee Cylinder Corporation

Filed May 24, 1971, Ser. No. 146,407
Int. Cl. F01l *25/06*
U.S. Cl. 91—279 **1 Claim**



A double acting fluid cylinder and piston unit having valve control means for providing constant reciprocating motion of the piston. The valve control means includes a pilot spool which is actuated by the piston at either end of its predetermined travel, and which spool then directs pressure fluid to actuate a flow directing spool so that pressure fluid is directed to the opposite end of the cylinder to thereby reverse direction of movement of the piston. The relationship between the pilot spool and follower means on the piston is externally adjustable to vary the stroke of the piston.

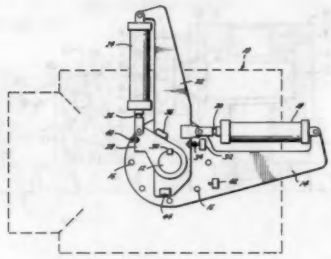
3,720,138
OPERATOR

Davis A. Van Scoy, Houston, Tex., assignor to Helmerich & Payne, Inc., Houston, Tex.

Filed Feb. 4, 1971, Ser. No. 112,579
Int. Cl. F01b *25/26, 31/12*; F15b *11/18*
U.S. Cl. 91—1 **4 Claims**

An apparatus for operating a valve either 90° or 180° comprising a first hydraulic cylinder driving a first arm, and a

second hydraulic cylinder mounted on the first arm and driving a second arm and including limit switches to indicate the



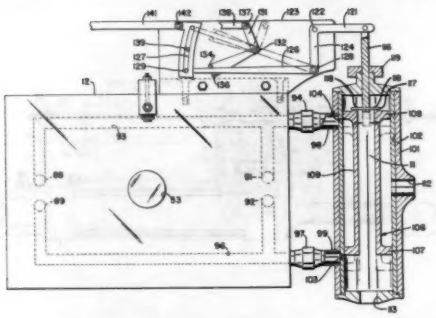
extremes of valve operation and a hydraulic system to supply fluid to the hydraulic cylinders.

3,720,139

OSCILLATING STEAM ENGINE

Raymond Blackney, 3105 Merrywood Drive, Sacramento, Calif.

Filed Dec. 16, 1971, Ser. No. 208,830
Int. Cl. F01b *15/06*
U.S. Cl. 91—176 **4 Claims**



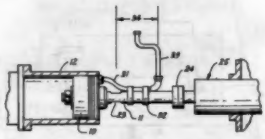
An oscillating steam engine has a frame including a valve plate with opposite planar faces arranged vertically and normal to the engine crank shaft. A first cylinder incorporates a plate having flanges outstanding therefrom and defining a planar face adapted to abut the valve plate. A pivot connection near its center joins the cylinder to the frame plate. The cylinder houses a reciprocating piston on a piston rod extending to a crank on the crank shaft. The cylinder is held against the valve plate by a holding yoke extending from the frame around a cylinder plate flange and carrying a roller abutting an outer face on the cylinder plate flange. Preferably, a second cylinder and appurtenances duplicate the first cylinder arrangement, the holding yoke being symmetrically extended to balance forces on the frame and preferably being repeated above the below the pivot connection. A mechanism similar to a Stephenson link connects a throttling and reversing valve in a steam supply and conduit.

3,720,140

PUMP PISTON

Larry E. Lee, Houston, Tex., assignor to G. W. Murphy Industries, Inc., Houston, Tex.

Filed Aug. 27, 1971, Ser. No. 173,506
Int. Cl. F01b *31/00*
U.S. Cl. 92—87 **1 Claim**



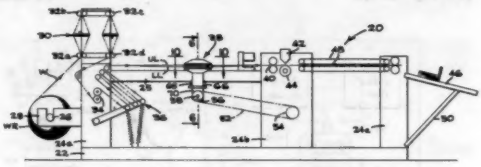
A single-acting pump having an elastomeric and synthetic fabric piston seal ring and means to supply fluid to the piston to cool and clean the piston and cylinder.

3,720,141

APPARATUS FOR MAKING THERMOPLASTIC HANDLE BAGS

David K. Stock, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed April 8, 1970, Ser. No. 26,483
Int. Cl. B31b *1/14, 1/86;* **B32b** *31/00*
U.S. Cl. 93—33 **11 Claims**



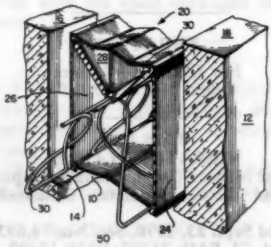
This application discloses a bag machine adapted to form handle bags from a thermoplastic web material. The handle bags are made with a reinforced mouth comprising two or more layers of web which are of sufficient width so that hand receiving cut-outs can be formed therein. A bat of this form can be securely and easily grasped by one hand and the multilayered web provides sufficient strength to prevent tearing of the bag about the cut-outs.

3,720,142

ELASTOMER SEAL FOR MODULAR ROADBEDS

Robert Lee Pare, 1106 Turks Head Bldg, Providence, R.I.

Filed Sept. 7, 1971, Ser. No. 177,953
Int. Cl. E01c *11/12*
U.S. Cl. 404—67 **7 Claims**



An elastomer joint seal used in modular, slab-like construction for pavements, roads, wall panels and the like. The seal is

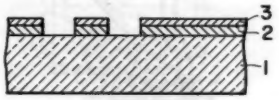
generally elongated and is placed between facing edges of adjacent modular elements. A pair of spring elements, lodged in the form of an inverted V, runs longitudinally of the seal. By virtue of the internal geometry of the elastomer seal, movement of the modular elements relative to each other strains the spring elements in their respective planes. Two other forms of the seal are disclosed in which one or two additional spring elements are included in the construction.

3,720,143

MASK FOR SELECTIVELY EXPOSING PHOTO-RESIST TO LIGHT

Toshio Hashimoto, and Isao Tanabe, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1971, Ser. No. 111,972
Claims priority, application Japan, Feb. 2, 1970, 45/8500
Int. Cl. G03b ; G03c *5/00*; B32b *31/14*
U.S. Cl. 95—1 **3 Claims**



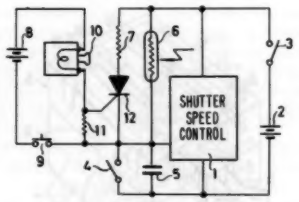
A mask for photoengraving and its method of manufacture, which mask comprises a transparent glass substrate, an aluminum layer formed on the substrate with a predetermined pattern and an anodized aluminum oxide layer formed on the aluminum layer, the aluminum oxide layer may include a substance which does not reflect light, such as ultraviolet rays.

3,720,144

FLASH APPARATUS FOR A CAMERA

Takashi Uchiyama, Tsurumi-ku, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1970, Ser. No. 96,106
Claims priority, application Japan, Dec. 10, 1969, 44/99571
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **19 Claims**



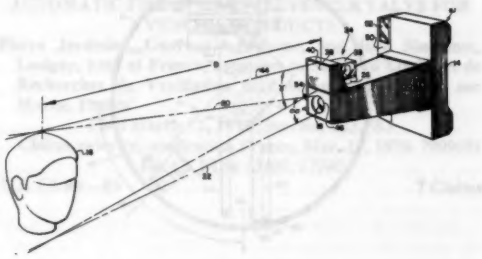
In the flash apparatus disclosed, an electric shutter is controlled by a photosensitive element forming a time constant circuit with a timer capacitor. A switching element, that responds to current flowing through a triggered flash unit, connects a resistive element in series with the time capacitor to form another time constant circuit. This adjusts the shutter to flash.

3,720,145

PORTRAIT CAMERA HAVING SYNCHRONIZED FLASH ILLUMINATION SOURCE

Bruce K. Johnson, Andover, and William A. Shelton, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed June 29, 1970, Ser. No. 50,648
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 R **11 Claims**



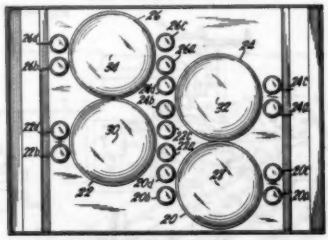
A portrait camera designed for closeups, having a Fresnel lens in front of the flashcube mount for focusing light from the flashcube into a relatively narrow and limited field angle, corresponding to the narrow field of view of the objective lens of the camera, and for directing light toward the axis of the camera lens.

3,720,146

MULTISPECTRAL CAMERA

Edward F. Yost, Jr., Northport, N.Y., assignor to Spectral Data Corp., Hicksville, N.Y.

Division of Ser. No. 842,133, July 16, 1969. This application March 15, 1972, Ser. No. 234,853
Int. Cl. G03b *33/04*
U.S. Cl. 95—12.2 **5 Claims**



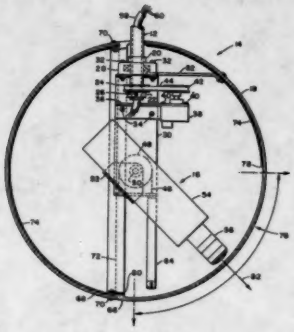
A multispectral camera simultaneously forms four black-and-white pictures of the same subject on s strip of photographic film. A different region of the electromagnetic spectrum is primarily employed in forming each picture. Simultaneously with the forming of the pictures, penlights mounted in the camera form on the film a number of fiducial marks associated with each picture. In projecting the pictures for viewing after they are developed, an additive color viewer is used having a separate projection lens for each picture, the lenses being movable with three degrees of freedom so that the projected images of the fiducial marks can be made to coincide. In this way, the projected images of the four pictures are accurately superimposed to produce a composite image in true or false color.

3,720,147

MASK FOR SURVEILLANCE CAMERA

Winfield W. Bemis, Maynard, Mass., assignor to Setronics Corp., Maynard, Mass.

Filed April 29, 1971, Ser. No. 138,600
Int. Cl. G03b *17/56*
U.S. Cl. 95—86 **10 Claims**



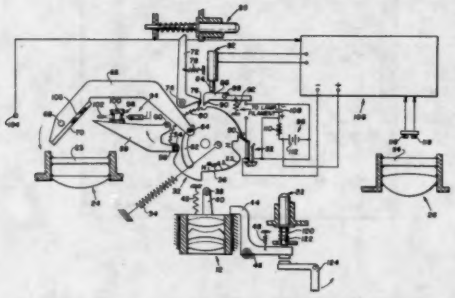
A surveillance camera is mounted within and disguised by a hollow spherical mask. The mask and camera rotate about an axis to scan a field of view, and the camera is aimed through a transparent window in the mask. The inner surface of the mask in the line of vision through the window and the outer surface adjacent the window are darkened to minimize the visibility of the camera.

3,720,148

APPARATUS HAVING AN AUTOMATIC RANGE FINDER MECHANISM

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 743,471, July 9, 1968. This application May 18, 1970, Ser. No. 38,304
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 C **3 Claims**



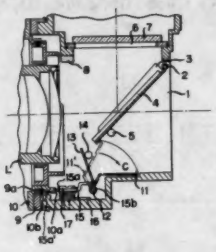
A photographic camera or the like, using triangulation for range distance measurement, and having an automatic range finder mechanism. The apparatus is arranged to sweep a modulated light beam across a plane which includes a subject of interest, and the reflected light returning to the apparatus is imaged on spaced photoelectric transducers differentially connected to produce a varying electrical signal. The range finder mechanism includes a cam having a predetermined cam surface indicating defined range distances and adapted to move as a function of the sweeping light beam. When the reflected light falls equally on the photoelectric transducers, an output signal is developed and applied to an electromechanical transducer which arrests further rotational displacement of the cam. The range distance is thus established by the cam position, and any utilization means, such as a camera objective lens or the like, may be employed to utilize the range distance intelligence defined by the cam position.

3,720,149

LIGHT SHIELDING DEVICE FOR INTERCHANGEABLE LENS CAMERA

Sunao Ishizaka, Tokyo, and Minoru Takahashi, Kanagawa-ken, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 7, 1969, Ser. No. 814,066
Claims priority, application Japan, Apr. 9, 1968, 43/28,507
Int. Cl. G03b *17/24*
U.S. Cl. 95—44 **4 Claims**



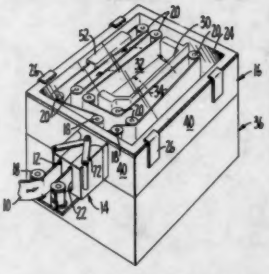
A light shielding device for cameras with interchangeable lenses which prevents the light entering the camera body through the lens mounting opening from reaching the shutter curtain when there is no lens mounted in the camera body. A light shielding plate mounted within the camera body is biased to a position interposed between the lens mounting opening and the shutter curtain. A cam means on each of the interchangeable lenses for the camera actuates an interlocking device within the camera to withdraw the light shielding plate from between the lens and the shutter curtain as the lens is installed in the camera body.

3,720,150

DIAZO FILM DEVELOPER

Roy Eugene Hurtig, Montesereno; Don Winston Geri, Sunnyvale, and Paul Horst Becker, San Jose, all of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Feb. 16, 1971, Ser. No. 115,588
Int. Cl. G03d *7/00*
U.S. Cl. 95—94 G **12 Claims**



A diazo film developer and method of developing roll-type diazo film, continuously fed into the developer through a seal, wherein the film is (1) subjected to a cycled air mixture containing water vapor cooled to the dew point whereby a water condensate is deposited on the surface of the film, (2) simul-

taneously subjected to an ammonia vapor which is absorbed by the water condensate to develop the film, (3) subsequently subjected to the cycled air mixture preheated to dry the film and scavenge excess ammonia gas.

3,720,151

DEVICE FOR OSCILLATING IMAGE PLANE ON THE SIDE OF PHOTOELECTRIC ELEMENT IN AUTOMATIC FOCUSING DEVICE

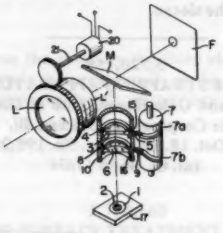
Yoshihisa Katsuyama, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 17, 1970, Ser. No. 72,983

Claims priority, application Japan, Sept. 29, 1969, 44/77066

Int. Cl. G03b *3/02*

U.S. Cl. 95—44 R **10 Claims**



An automatic focusing apparatus in a camera includes a photoelectric element adapted to receive the light rays passing through the objective and partly reflected by a semi-transparent mirror. The image plane of the reflected light rays is oscillated by two lenses disposed between the mirror and the photoelectric element which are engaged with a cam to move in opposite directions from each other. The electric signal from the photoelectric element actuates a servo motor to move the objective for automatic focusing.

3,720,152

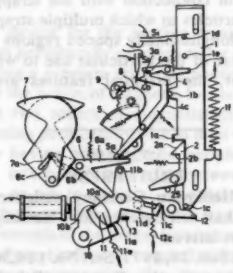
ELECTRONIC EXPOSURE CONTROL APPARATUS FOR A CAMERA

Takashi Uchiyama, and Kanehiro Sorimachi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1970, Ser. No. 36,953

Int. Cl. G03b *9/62*

U.S. Cl. 95—53 EB **2 Claims**



In the electronic exposure control apparatus disclosed the shutter blades also serve as diaphragm blades. An actuating mechanism moves the shutter blades in response to a shutter release. At the same time, the actuating mechanism or shutter release starts charging a capacitor on the basis of the response of a photocell to ambient light. When the capacitor reaches a given state of charge an electric circuit constrains the actuating mechanism to stop the blades from opening and to reclose. A lock device in the actuating mechanism holds the release in the position in which it causes the actuating mechanism to start opening the blades until the electric circuit constrains the the actuating mechanism to reclose the blades.

3,720,153

AUTOMATIC FIRE-SPREAD PREVENTER VALVE FOR VENTILATION DUCTS

Pierre Jardinier, Gournay-sur-Marne, and Jack Simonnot, Lesigny, both of France, assignors to Societe d'Etudes et de Recherches de Ventilation et d'Aeraulique, Villiers, sur Marne, France

Filed March 12, 1971, Ser. No. 123,783

Claims priority, application France, Mar. 13, 1970, 7009001

Int. Cl. F16k *13/00, 17/40*

U.S. Cl. 98—86 **7 Claims**

A valve device is provided which is intended for preventing the propagation of fire in ventilation ducts or the like. It comprises a valve adapted, in case of abnormal or sufficient temperature increment, to automatically close the duct in which it is mounted.

3,720,154

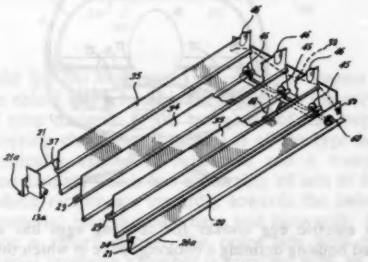
REGISTER STRUCTURES

Frank J. Biggi, 5445 Katy Freeway, Houston, Tex. 77007

Filed Jan. 27, 1972, Ser. No. 221,217

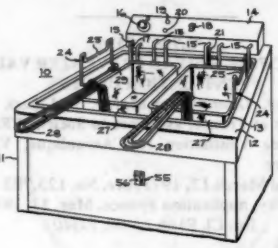
Int. Cl. F24f *13/00*

U.S. Cl. 98—110 **6 Claims**



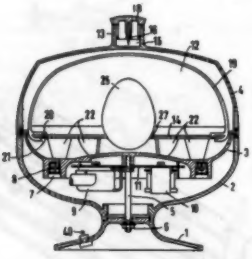
Improved register structures which are assembled without use of welds, or rivets or screws, or other similar connection devices. The face plates of the registers have oppositely directed louvers or vanes with which the frame and closure assembly are engaged. The vanes with which such assemblies are engaged are oppositely angular, and the frame parts are engaged therewith so that the parts are firmly held.

3,720,155
FRYING APPARATUS WITH REMOTE CONTROL THERMOSTAT
Donald E. Fritzsche, Chicago Heights, Ill., assignor to General Electric Company, Fort Wayne, Ind.
Filed March 22, 1972, Ser. No. 237,088
Int. Cl. A47j 37/00
U.S. Cl. 99—337 4 Claims



A frying apparatus includes a support housing, an open top fat container, heating means for heating the fat in the container, and an escutcheon mounted above and behind the fat container. A thermostat, mounted in the escutcheon, is operatively connected to the heater for controlling energization of the heater. An electric motor unit is operatively connected to the thermostat for adjusting the setting of the thermostat upon energization of the motor. There is a circuit for connecting the motor unit to a suitable source of electric energy, including a manually operable switch. The switch is mounted in the housing forward of the open fat container.

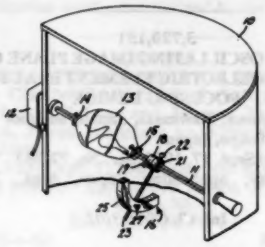
3,720,156
ELECTRIC EGG COOKER
Harry Hentschel, Munich, and Otto Bjarsch, Traunreut, both of Germany, assignors to Siemens-Electrogerate GmbH, Berlin and Munich, Germany
Filed Jan. 25, 1971, Ser. No. 109,442
Claims priority, application Germany, Jan. 27, 1970, G 70 02 615.2; Feb. 3, 1970, G 70 03 539.1
Int. Cl. A47j 29/02
U.S. Cl. 99—332 8 Claims



An electric egg cooker for cooking eggs has a chalice-shaped housing defining a cooking space in which the eggs are cooked.

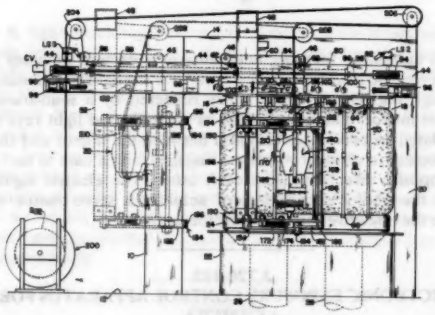
3,720,157
WEIGHT COMPENSATOR FOR BARBECUE SPITS
Frederick H. Van Bergen, 2005 Argonne Drive, Minneapolis, Minn.
Filed May 13, 1971, Ser. No. 142,918
Int. Cl. A47j 37/04
U.S. Cl. 99—421 H 9 Claims

A weight compensator for barbecue spits is shown. The device can be securely attached to any known spit configuration, but yet adjusted to any selected position around the spit. A sleeve is secured to the spit by a set screw. A rotatable collar is mounted on the sleeve. A spoke-like rod is attached to the



collar and carries an adjustable weight. A set screw is provided to lock the collar to the sleeve at any selected position on the circumference of the sleeve.

3,720,158
BALE STRAPPING APPARATUS
Leo Peter Sauer, and Gale Huson, both of Glenview, Ill., assignors to Signode Corporation, Chicago, Ill.
Filed Oct. 18, 1971, Ser. No. 190,203
Int. Cl. B65b 13/04
U.S. Cl. 100—4 14 Claims

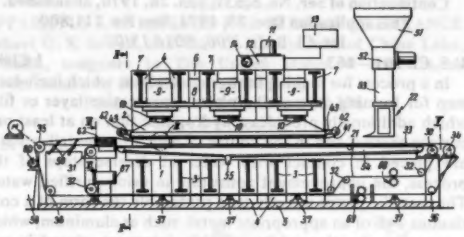


The improved strapping apparatus comprising the present invention has been designed primarily in connection with the strapping of springy fibrous materials such as cotton or synthetic fibers while the same are held in bale form and under compression in the press box chamber of a baling press. The invention is however capable of other uses and strapping apparatus embodying the principles of the present invention may be found useful in connection with the strapping of a wide variety of other articles to which multiple strapping loops are to be applied at longitudinally spaced regions therealong. Irrespective however of the particular use to which the invention may be put, the essential features are at all times preserved.

3,720,159
FRUIT PRESS
Otto Gunkel, 71 Heilbronn, Germany, assignor to Schenk Filterbau Gesellschaft mit Beschrankter Haftung, Waldstetten, Germany, a part interest
Filed Feb. 24, 1971, Ser. No. 118,361
Claims priority, application Germany, Feb. 25, 1970, P 20 08 739.2
Int. Cl. B30b 5/04
U.S. Cl. 100—118 12 Claims

A fruit press in which a press punch is moveable toward a bed member for pressing fruit mash to express juice

therefrom. A grate band having spaced bars is moveable over the bed member and over the the grate band is a filter cloth. The mash is charged onto the cloth at one side of the press and



is conveyed into the press by the filter cloth. An automatic controller controls the press punch so the mash on the cloth has the juice expressed therefrom over a period of about 2 to 4 minutes.

3,720,160

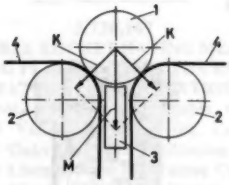
DEVICE FOR SURFACE TREATMENT OF MATERIAL

Rupert Kraft, Piertstrasse 8, and Johannes Zimmer, Ebenthalerstrasse 133, both of Klagenfurt, Austria

Division of Ser. No. 786,137, Dec. 23, 1968, Pat. No. 3,641,928. This application June 21, 1971, Ser. No. 154,923

Int. Cl. B30b *3/02*

U.S. Cl. 100—160 **26 Claims**



A calender device for the surface treatment of material moved between peripherally coacting roller and counter roller surfaces exerting a pressure onto one another during relative rotation under the action of magnetic forces. The device comprises at least two rollers of magnetizable material spaced apart and coacting peripherally with at least two other counter rollers usually having non-magnetic peripheries, and with a magnet body interposed generally between the first-mentioned rollers so as to exert a magnetic attractive force thereon such that regardless of the form and number of rollers opposite components of the magnetic attractive force between the magnet body and rollers of magnetizable material lie in intersecting planes connecting the respective axes of the counter rollers and the axis of the roller of magnetizable material which they adjoin. The counter rollers are disposed parallel to and are equally spaced at opposite sides of the magnet body and at least one of the rollers of magnetizable material, and in another embodiment from both of said rollers. Further forms embody respectively three and four of the rollers of magnetizable material arranged peripherially in a spaced apart manner alternately engaging with interposed counter rollers and having a centrally disposed non-rotatable magnet body with a plurality of opposite polarity pole faces corresponding in number to and disposed adjacent the first-mentioned rollers, and the rollers therearound form a static closed system in which the rollers and magnet longitudinal bodies are not subjected to longitudinal deflection in most forms, and in others only to minimal deflection during operation. Still further more preferred forms embody circumferentially disposed coacting rollers and counter rollers disposed concentrically around a central roller with which only the counter rollers also peripherally coact during relative rotation of the rollers, and with said counter rollers usually being mounted at a uniform diameter form the axis of the center roller which diameter is less than that of the other rollers. The magnet body in one of these latter forms includes having the form of separate magnet bars interposed radially between the center roller and the rollers of magnetizable material and extending longitudinally over the length of the rollers. Another form has the magnet bodies in the form of a plurality of opposite polarity pole faces integrally disposed in a circumferentially spaced manner around the periphery of the central rotatable roller to exert the aforestated magnetic attractive forces sequentially on the encircled rollers thereabout during operation.

3,720,161

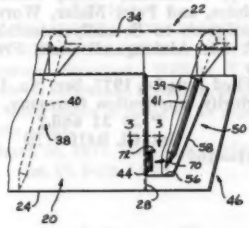
BALER FEEDER WITH MATERIAL ACCUMULATION PREVENTION MEANS AT THE OUTBOARD END

Charles A. Smith, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Continuation-in-part of abandoned application Ser. No. 846,665, Aug. 1, 1969. This application Dec. 7, 1971, Ser. No. 205,645

Int. Cl. B30b *15/30*

U.S. Cl. 100—189 **6 Claims**



A shield for the outermost set of feeder fingers of a baler, the shield being so designed to prevent the accumulation of crop material at the outer end of the crop material receiving chamber. The baler is of the type having a longitudinally extending bale case and a transverse feeding mechanism which has a plurality of sets of feeder fingers which reciprocate inwardly towards the bale case to feed material into the bale case and outwardly therefrom upon a return stroke. The outer side wall of the crop material receiving chamber is provided with an aperture through which the outermost set of feeder fingers pass on their return stroke, the opening being of a width and depth only slightly greater than the width and depth of the feeder fingers. The shield which prevents material accumulation is mounted on the outer surface of the outer side wall adjacent the aperture and has an internal width equal to the width of the aperture and a sloping outer wall which is disposed at an angle greater than the angle of repose for the crop material which is to be fed into the bale case, the lower portion of the outer wall being disposed in close proximity to the lower ends of the outer-

most feeder fingers. The upper surface of the bottom wall of the shield is at the same level as the bottom of the aperture.

3,720,162

APPARATUS FOR DECORATING ROTATABLE ARTICLES

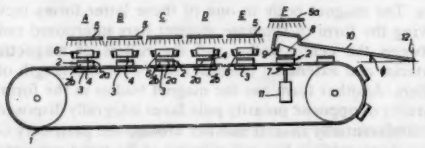
David Richard James, Hasfield, England, assignor to Murray Curvex Printing Limited, Gloucester, England

Filed June 26, 1970, Ser. No. 50,085

Claims priority, application Great Britain, June 26, 1969, 32256/69

Int. Cl. B41f *17/28*

U.S. Cl. 101—39 **4 Claims**



A machine for printing or decorating the external surfaces of articles has a freely rotatable work holder on which an article can be mounted, an offset printing blanket and a screen stencil or stencils by which an offsetting image presenting a developed view of the pattern to be applied to the article can be produced on the blanket. Either the work holder or the blanket is mounted on a pivotal arm pivotal movement of which produces relative movement of the article and blanket during which the article rolls along the surface of the blanket and thus picks up the image.

3,720,163

DOCTOR DEVICE FOR LOW PRESSURE ROTATING PRESSES

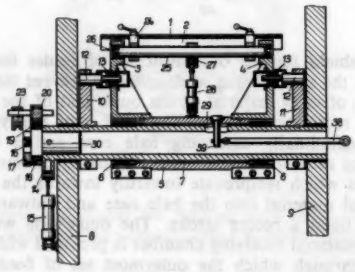
Rudolf Frey, Dirmstein, Pfalz, Arnold Niedermaier, Beindersheim, and Peter Maier, Worms (Rhine), Germany, assignors to Schnellpressenfabrik Frankenthal Albert & Cie Aktiengesellschaft, Frankenthal, Pfalz, Germany

Filed June 24, 1971, Ser. No. 156,214

Claims priority, application Germany, June 26, 1970, P 20 31 680.7

Int. Cl. B41f *9/10*

U.S. Cl. 101—169 **5 Claims**



A doctor device for photogravure printing presses. The doctor is pivotably mounted on a non-twistable frame on the printing press so as to be movable to and away from the printing cylinder of the press. A bushing, upon which the doctor device is mounted, is oscillated longitudinally along the axis of the printing cylinder to oscillate the doctor and distribute the wear of the doctor more evenly during operation.

3,720,164

METHOD OF MAKING CORROSION RESISTANT METALLIC PLATES PARTICULARLY USEFUL AS LITHOGRAPHIC PLATES AND THE LIKE

Edward A. Casson, Jr., Easton, Md., assignor to Durolith Corporation, Easton, Md.

Continuation of Ser. No. 5,531, Jan. 26, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,800

Int. Cl. B41n *3/00*; B01d *15/00*

U.S. Cl. 101—463 **1 Claim**

In a process for making lithographic plates which includes a step for forming on metallic plates a protective layer or film which additionally provides a hydrophilic film on at least one surface thereof and in the course of which the metallic plates are placed in contact with water at diverse steps of the process, the improvement consisting in using purified water. The metallic plates initially take preferably the form of a continuous web of an appropriate metal, such as aluminum, which is successively: cleaned by suitable detergent, rinsed in purified water, provided with a protective layer or film, rinsed again in purified water, and coated with a sensitizing diazo resin or the like. The metallic plates are provided with a protective layer or film by dipping in a solution of a soluble silicate in purified water at a predetermined temperature, or alternately, the metallic plates may have a protective layer electrolytically formed thereon, the electrolyte consisting of a solution of sodium silicate in purified water. The use of purified water, which is basically tap water which has been deionized, de-chlorinated, de-gasified, and which is free of solid particles, in the diverse steps of the process prevents the formation of "black spots" on the surface of the plates provided with a photosensitive coating of diazo resin or the like.

3,720,165

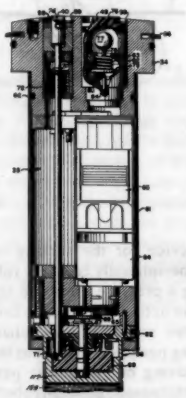
TORPEDO EXPLODER MECHANISM

Theodore E. Dinsmoor, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 14, 1952, Ser. No. 276,707

Int. Cl. F42c *15/08*

U.S. Cl. 102—16 **11 Claims**



1. A torpedo exploder comprising, in combination, a base unit having bores therein, hydrostatically controlled switch means disposed in one of said bores, inertia actuated firing means disposed in another of said bores, a control unit detachably secured to said base unit, motor means within said control unit, gear means driven by said motor means, and an arming device detachably secured to said control unit, a rotor provided with detonators within said arming device and adapted to be moved to an armed position in response to

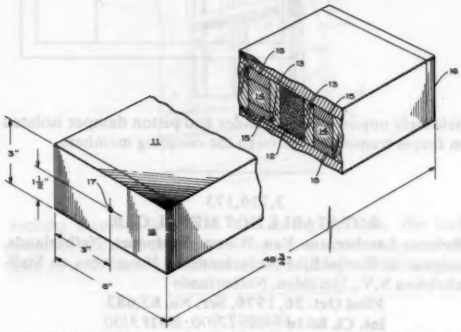
movement of the gear means, said hydrostatically controlled switch means and said inertia actuated firing means being included in a circuit supplying an electrical charge to said detonators.

3,720,166

APPARATUS AND METHOD FOR TERRAIN CLEARANCE

Robert G. S. Sewell, and Carl C. Halsey, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 2, 1971, Ser. No. 168,358
Int. Cl. F42b *3/60*
U.S. Cl. 102—22 **6 Claims**



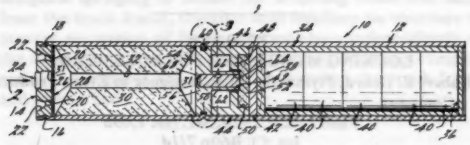
Rod expelling explosive apparatus is used to clear bushes and trees from foliage covered terrain. The apparatus comprises a box containing a linear explosive charge and at least one rod which is forcefully expelled at high velocity when the charge is detonated. The method involves placing rod expelling apparatus on the ground in a position such that the rod or rods will be expelled in a predetermined desired direction at a trajectory just above ground level and detonating the charge.

3,720,167

ROTATABLE ROCKET HAVING MEANS FOR PREVENTING FLAMEOUT DUE TO CENTRIFUGAL FORCE CREATED DURING ROTATION THEREOF

Robert Mainhardt, P.O. Box 225, Diablo, Calif.; David L. Cochran, 165 Valle Verde, Danville, Calif.; Arthur L. Deleray, 5171 Oakview Court, Pleasanton, Calif.; Gary L. Fritzler, 1100 Lincoln, Apt. 35, Walnut Creek, Calif., and Robert C. Mawhinney, 170 Camino Encanto, Danville, Calif.

Continuation-in-part of Ser. No. 694,208, Dec. 28, 1967, abandoned. This application April 16, 1970, Ser. No. 28,219
Int. Cl. F42b *13/40*
U.S. Cl. 102—34.4 **4 Claims**



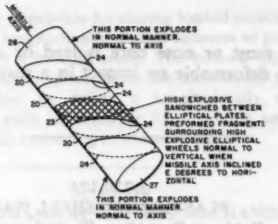
A rocket device comprising an elongated generally tubular shaped housing; a propulsion charge in one end of the housing; means for directing the products of combustion of the propulsion charge rearwardly of the housing in a manner so as to impart rotary motion to the device as it is propelled forwardly by the charge; signal means in the form of a quantity of radar signaling chaff in the housing; an expulsion charge for expelling the signaling means from the housing; means including a combustable material within the housing for igniting the expulsion charge at a predetermined time after the propulsion charge has been ignited, and an enclosure for operatively supporting the combustable material within the housing and for preventing the ignited portion of the combustable material from being forced out of the enclosure under the influence of centrifugal force resulting from rotation of the device.

3,720,168

ELLIPTICAL WARHEAD

Alfred V. Sylwester, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 14, 1970, Ser. No. 97,455
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 **7 Claims**


THIS PORTION EXPLODES IN NORMAL MANNER, NORMAL TO AXIS
HIGH EXPLOSIVE SANDWICHED BETWEEN ELLIPTICAL PLATES, PREFORMED FRAGMENTI SURROUNDING HIGH EXPLOSIVE ELLIPTICAL WHEELS NORMAL TO VERTICAL WHEN MISSILE AXIS INCLINED E DEGREES TO HORI-- ZONTAL
THIS PORTION EXPLODES IN NORMAL MANNER, NORMAL TO AXIS

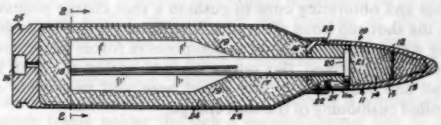
High explosive or shaped charge modules are sandwiched between offset elliptical plates, and a series of such elliptical sections pack into a cylindrical, roll-stabilized air-to-surface missile body when inclined to the missile axis at a nominal dive angle. A preformed fragmentation or modified continuous rod shell surrounds the high explosive sections and when detonated above ground a horizontal orientation is obtained for maximum lethal effects.

3,720,169

INCENDIARY PROJECTILE FOR SMOOTH BORE SPECIAL PURPOSE INDIVIDUAL WEAPON

Theordore B. Johnson, Stratford; William T. Cole, Jr., Bridgeport, and Orval M. Stamm, Stamford, all of Conn., assignors to The United States of America as represented by the Secretary of the Army

Filed March 30, 1971, Ser. No. 129,359
Int. Cl. F42b *11/24*
U.S. Cl. 102—90 **4 Claims**



An incendiary projectile for smooth bore special purpose individual weapons comprising a flechette provided with a head consisting of a bullet jacket having a combination of incendiary mixtures therein.

3,720,170

HEAVY SMALL ARMS PROJECTILE

Wesley Lynn Godfrey, 2020 N. Road 44, Pasco, Wash. 99301

Filed Oct. 12, 1970, Ser. No. 79,933
Int. Cl. F42b *11/00*
U.S. Cl. 102—92.3 **1 Claim**

A standard copper alloy jacket is used to envelope two or more dissimilar core materials which fill the axial cross

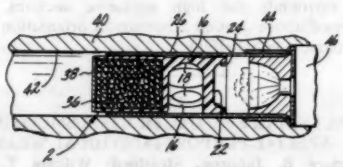
section of the jacket. During the manufacture, the core materials, at least one of which is more dense than lead, are sequentially seated under pressure, in the jacket. The

forward most or nose core is lead or an alloy thereof which is deformable on impact in a manner common to the art.

3,720,171
PLASTIC SHOT SHELL WAD

Charles L. Hubbard, East Alton, Ill., assignor to Olin Corporation

Filed March 12, 1971, Ser. No. 123,536
Int. Cl. F42b *7/08*
U.S. Cl. 102—95 **10 Claims**



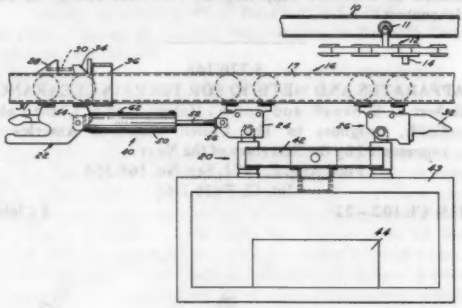
A unitary plastic wad structure for use with a shotshell, the wad including a shot cup portion and an obturating cup portion both of cylindrical configuration, and a plurality of plastic strips interconnect opposite circumferential portions of the shot and obturating cups to cushion a shot charge positioned in the shot cup when the wad is fired from a gun. The cushioning strips, when subjected to compressive forces generated by firing the shotshell, flex outwardly and against the shell tube wall and subsequently, the barrel bore wall to provide controlled cushioning of the shot charge.

3,720,172
CONVEYOR CARRIER TOW BAR

Clarence A. Dehne, Farmington, Mich., assignor to Jervis B. Webb Company

Filed July 29, 1970, Ser. No. 59,321
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 S **10 Claims**

A conveyor carrier, having a driving trolley with a driving dog engageable by a propelling pusher and at least one other trolley, the driving trolley being connected to the other trolley by a tow bar which has two motion transmitting or coupling members interconnected for relative longitudinal movement so that the spacing between the trolleys can increase and decrease within limits defined by abutments on the coupling members. Relative movement between the coupling members

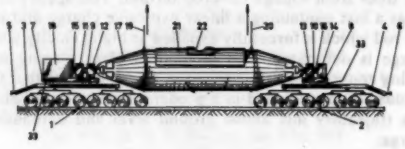


is yieldingly opposed by a cylinder and piston damper isolated from forces transmitted through the coupling members.

3,720,173
ROTATABLE HOT METAL CAR

Wilhelmus Lamberutus Van Wierst, Santpoort, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens en Stalfabrieken N.V., Ijmuiden, Netherlands

Filed Oct. 26, 1970, Ser. No. 83,682
Int. Cl. B61d *9/02, 17/00;* **B61f** *3/00*
U.S. Cl. 105—271 **4 Claims**



A car for conveying molten metal comprising two independent bogies spaced longitudinally one behind the other in the direction of movement, said bogies carrying horizontally oriented bearings and being connected together by a longitudinal vessel having journals rotatable in said bearings, said vessel, with said bearings, forming a unit detachably connected to said bogies, and especially from frame plates having spherically movable engagement with the bogies one of which carries motor means for tilting the vessel, the detachable connections being provided by forming the frame plates of upper and lower sections mutually aligned by self-centering male and female interfitting portions, with readily detachable means securing said upper and lower sections together.

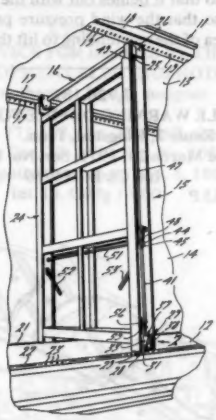
3,720,174
LOCKING MECHANISM FOR BULKHEADS

Robert E. Heard, Plymouth, Mich., assignor to Evans Products Company

Filed Jan. 7, 1970, Ser. No. 1,095
Int. Cl. B60p *7/14*
U.S. Cl. 105—376 **11 Claims**

A freight bracing bulkhead assembly embodying an improved locking mechanism for facilitating release under load. Two embodiments of locking mechanisms are disclosed each of which incorporates a locking member that is slidably supported in a socket opening between a locked position and a released position. A wedging member is also received in the socket opening and precludes transverse movement of the locking member when the wedging member is in a locking position. An operating mechanism is incorporated for first moving the wedging member between its locking position and

a released position and subsequently moving the locking member from its locking position to its released position. When the wedging member is in its released position and the



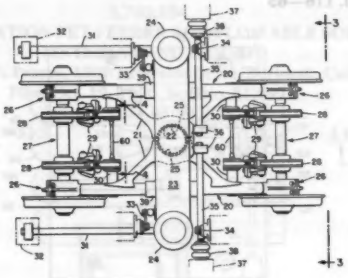
locking member is still in its locking position, the locking member and socket member may move in the direction of the load so as to facilitate release of the locking member.

3,720,175

RESILIENTLY MOUNTED RAILWAY VEHICLE TRUCK

Harry M. Russell-French, Philadelphia, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Dec. 28, 1970, Ser. No. 101,697
Int. Cl. B61f *3/08, 5/30*; B61h *13/00*
U.S. Cl. 105—224.1 **10 Claims**



This application discloses a railway vehicle truck having axle connections with the side frame members which provides adequate springing to isolate the unsprung wheel-axle units from the truck frame, together with auxiliary tie structure to prevent separation of frame side members independently of the axle connections; also means assisting the supporting air springs to improve the connection between the truck frame and vehicle body.

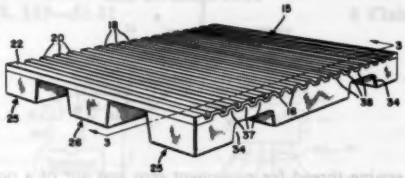
3,720,176

MOLDED PALLET

Thomas Munroe, c/o Moraine Box Company, P.O. Box 538, Dayton, Ohio

Filed Aug. 13, 1970, Ser. No. 63,573
Int. Cl. B65d *19/38*
U.S. Cl. 108—58 **11 Claims**

Resin impregnated wood fibrous material is molded to form a rectangular deck member and a set of separate elongated hollow leg members. The deck member has a generally uniform wall thickness and defines parallel spaced downwardly projecting reinforcing ribs, and the side walls of each of the leg members have teeth-like projections which extend upwardly between the ribs. The leg members are spaced laterally across the deck member and are secured to the underneath surface of the deck member by a waterproof adhesive. The leg members have outer surfaces perpendicular to



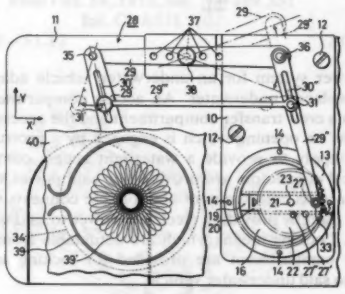
the deck member to provide for storing loaded pallets within a rack, and define longitudinally spaced recesses to provide for four-way entry by a fork lift truck. The bottom wall portion forming each recess is spaced from the underneath surface of the deck member to define a longitudinally extending chamber within each leg member for receiving an optional rigid longitudinally extending reinforcing member.

3,720,177

STITCH FRAME ACTUATING MECHANISM MOUNTABLE ON AN ORDINARY SEWING MACHINE

Bunsaku Taketomi, 56-141 Aza-Ishikane, Oaza-Iwasaki, Japan

Filed June 25, 1971, Ser. No. 156,827
Int. Cl. D05c *3/02*
U.S. Cl. 112—102 **8 Claims**



A stitch frame actuating mechanism mountable on an ordinary linear sewing machine for the purpose of stitching cycloidal patterns and their modifications without using conventional pattern-cams in which a planetary gearing driven by a rotation-generating means actuated by one of the reciprocating members of the sewing machine is connected to a stitch frame holder through a parallelogramic link to displace said stitch frame holder along a cycloidal curve.

3,720,178

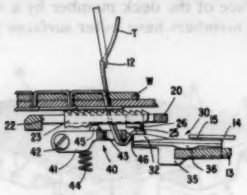
CHAINSTITCH CONVERSION DEVICE FOR LOCKSTITCH SEWING MACHINES

Michael F. Ivanko, Bloomsberg, Pa., assignor to The Singer Company, New York, N.Y.

Filed Nov. 23, 1971, Ser. No. 201,514
Int. Cl. D05b *1/14*
U.S. Cl. 112—168 **2 Claims**

A device for converting a lockstitch sewing machine into condition for forming single thread chainstitches, including a replacement throat plate with a thread engaging pin depending therefrom, and a thread deflecting member adapted to replace the bobbin in the sewing machine and formed with a

radial arm arranged in cooperative relation with said thread engaging pin. The thread deflecting member is shiftably supported in the loop taker and arranged to be influenced only by



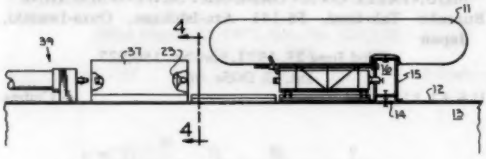
the sewing thread for movement into and out of a position maintaining the sewing thread in engagement with the thread loop engaging pin.

3,720,179

POWER SYSTEM FOR UNDERWATER VEHICLE

Ronald Cohen, Newington, Conn., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 9, 1971, Ser. No. 206,461
Int. Cl. B63g 8/00
U.S. Cl. 114—16 G **4 Claims**



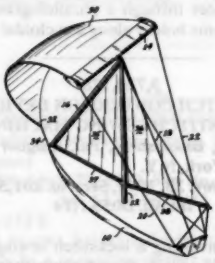
A power system for an underwater vehicle adaptable for being replaced underwater. An access compartment is provided in a crew transfer compartment and the access compartment has an opening which is engaged by a protrusion on a power supply to provide a watertight access compartment. Electrical connectors are provided on said power supply and in said access compartment and a cable connects these connectors thereby providing electrical power to said underwater vehicle. Locking means which are actuatable from the crew transfer compartment are provided for locking said power supply to said underwater vehicle.

3,720,180

RAFFE SAIL FOR BOATS

Phillip F. Stangeland, 121 Wavecrest Avenue, Venice, Calif.

Filed Nov. 27, 1970, Ser. No. 93,084
Int. Cl. B63h 9/04
U.S. Cl. 114—102 **3 Claims**



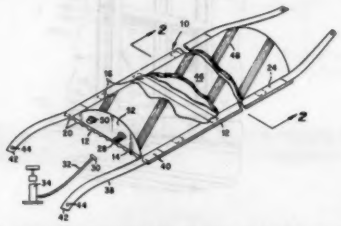
A sail for a boat rigged to present a horizontal rather than a vertical luff. The sail is triangular, one edge being attached to a yard which is supported from a mast in a horizontal position. The yard is formed as an air foil so that the horizontal luff produces a lifting force on the yard. One apex of the triangular sail is sheeted so that it bellies out with the upper part extending forwardly so that the wind pressure produces an upward thrust on an area of the sail tending to lift the bow of the boat.

3,720,181

INFLATABLE WARNING DEVICE FOR ROADWAYS

Jack D. Elkins, Route 2, Kingston, Tenn.

Filed March 29, 1971, Ser. No. 129,051
Int. Cl. E01f 9/10
U.S. Cl. 116—63 P **8 Claims**



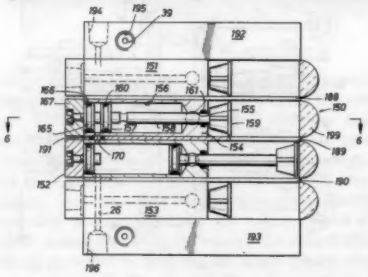
An elongated inflatable warning device adapted to be removably disposed transversely of a roadway during selected periods for control of vehicular traffic.

3,720,182

PNEUMATIC ANNUNCIATOR SYSTEM

Robert S. Harrah, P.O. Box 14410, Houston, Tex.

Division of Ser. No. 56,892, July 21, 1970, Pat. No. 3,651,643.
This application Nov. 18, 1971, Ser. No. 199,894
Int. Cl. G08b 1/04
U.S. Cl. 116—65 **18 Claims**



As a representative embodiment of the present invention, pressure-responsive indicators are coupled to suitable transducers monitoring selected operating conditions of an industrial machine. Pneumatic controls are arranged for providing first pneumatic signals when these operating conditions reach a predetermined value and producing second pneumatic signals should any of the operating conditions vary from its selected range. Other pneumatic controls are uniquely arranged for responding to the second signals to produce a brief third pneumatic signal which is effective to operate only the associated indicator while the other unaffected indicators are positively retained in their safe indicating positions. The indicators of the present invention are adapted to be stacked together and respectively include a number of passages adapted to coincide with the matching passages in the other indicators. One set of these passages in each indicator can be isolated from the other set by orienting the indicator in one position in relation to the other indicators. A second set of these passages is coupled to an alternately-positionable spool

in each indicator which is uniquely arranged to select which of the passages in this other set is to be coupled to the pressure-responsive element in that indicator.

3,720,183

TRANSFER DEVICE FOR IMAGES BY THE USE OF LIQUID DEVELOPMENT ELECTROPHOTOGRAPHY

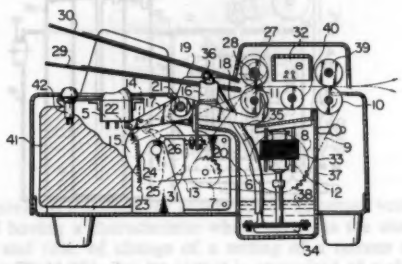
Shigeru Suzuki, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Division of Ser. No. 771,162, Oct. 28, 1968, abandoned. This application Dec. 29, 1970, Ser. No. 102,529

Claims priority, application Japan, Nov. 8, 1967, 42/71778

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **5 Claims**



There is disclosed herein a simple and reliable liquid development transfer device for images by the use of liquid development electrophotography.

3,720,184

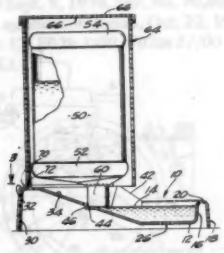
COMBINATION PET FEEDER FOR FLOWABLE SOLID MATERIAL AND LIQUID

Woodrow W. Pearce, 1200 Riverside Drive, Burbank, Calif.

Filed Oct. 19, 1970, Ser. No. 81,997

Int. Cl. A01k *05/00, 07/00*

U.S. Cl. 119—51.5 **1 Claim**



A pet feeder in the form of a feeding dish combined with containers for flowable materials which may be either liquid or granulated solid materials. The feeding dish has a slanting surface or ramp. A container for solid particulate material is positioned over the ramp to feed onto it. A liquid container having a discharge spout is positionable over the ramp which is provided with a flat ledge portion on which the spout normally rests, partially obstructing it and allowing flow through the remainder into the dish up to the level of the spout orifice. The liquid container is removable from the enclosure for filing and for use of the feeder for feeding solid material.

3,720,185

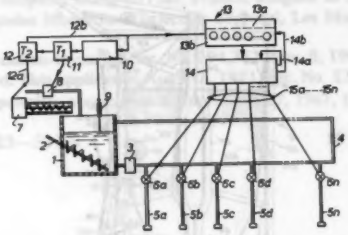
MIXING AND SUPPLY ARRANGEMENT FOR FEEDING LIQUID FEEDSTOCK

Maurice William Aldous, 73/75 High St., Bildeston, Ipswich, England, and John Clement Hitchcock, Chapel Farm, Ringshall, Stowmarket, England

Filed Oct. 26, 1970, Ser. No. 83,962

Int. Cl. A01k *5/02*

U.S. Cl. 119—51.11 **8 Claims**



Liquid food material for livestock is automatically fed to a multiplicity of delivery points by a mechanism operating cyclically in which each cycle involves the introduction of a given amount of solids and delivery is continued for a number of cycles sufficient to deliver sufficient solid material to the delivery points.

3,720,186

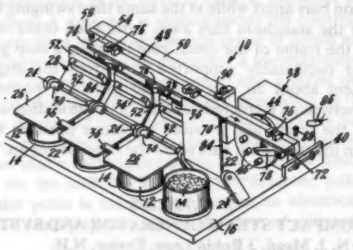
DISPENSING APPARATUS

William J. O'Rourke, 27 Palmyra Road, RFD 3, Brewster, N.Y.

Filed Oct. 14, 1971, Ser. No. 189,351

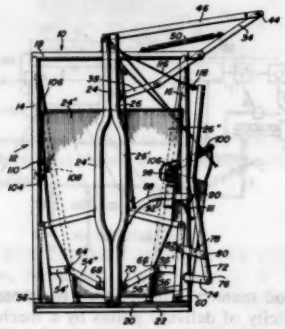
Int. Cl. A01k *5/02*

U.S. Cl. 119—51.12 **12 Claims**



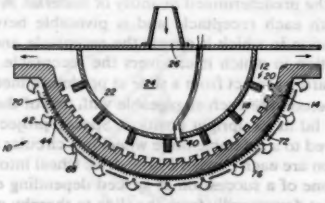
An apparatus for uncovering a predetermined quantity of material at the ends of consecutive preselected time periods has a plurality of stationarily-positioned receptacles, each for containing the predetermined quantity of material. A lid is associated with each receptacle and is pivotable between an upright position in which it covers the receptacle and an upturned position in which it uncovers the receptacle. Fingers which outwardly project from a slide at predetermined spaced locations thereon are each engageable with one of the lids for holding the lid in its upright position. Spaced projecting elements secured to a rotatable drive wheel in a circular arrangement thereon are each carried by the drive wheel into engagement with one of a succession of spaced depending elements which project downwardly from the slide to thereby move the slide along a generally linear path of travel as the drive wheel turns through a portion of one rotation cycle. As the slide moves along its path, one of the fingers, which are engaged with the lids at the beginning of the time periods, will disengage from one lid at the end of each time period to allow that lid to pivot to its upright position and thereby uncover one of the receptacles.

3,720,187
CATTLE RESTRAINING STANCHION
William P. McDonough, Box 836, Gunnison, Colo.
Filed Feb. 8, 1971, Ser. No. 113,556
Int. Cl. A61d *3/00*
U.S. Cl. 119—98 **8 Claims**



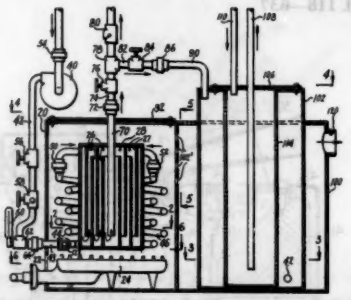
An animal catching gate including an upstanding frame having opposite sides and from which a pair of upstanding stanchion bars are supported for movement toward and away from each other along paths generally paralleling the medial plane of the frame. The lower ends of the stanchion bars are oscillatably supported from the frame for guided movement toward and away from each other and also for oscillation relative to each other and the frame about axes disposed generally normal to the frame. Actuating structure is also supported from the frame and operatively connected to the stanchion bars for shifting the stanchion bars toward and away from each other, the actuating structure, when actuated to open the catch gate, being operable to slid the lower ends of the stanchion bars apart while at the same time swinging the upper ends of the stanchion bars away from each other. Also, one side of the frame of the catch gate includes a stop gate panel member oscillatably supported therefrom for angular displacement about an axis disposed generally normal to the frame between a retracted depending position disposed at one side of the frame and a raised operative position extending between the stanchion bars when the latter are open.

3,720,188
COMPACT STEAM GENERATOR AND SYSTEM
George N. J. Mead, 3 Robin Lane, Exeter, N.H.
Filed Jan. 11, 1971, Ser. No. 105,561
Int. Cl. F22b *27/16*
U.S. Cl. 122—41 **15 Claims**



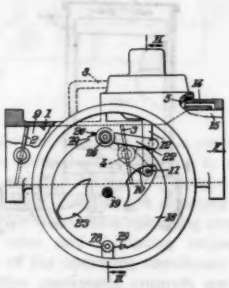
An ultra-compact flash steam generator is provided for driving various types of steam engines such as turbines, rotary positive displacement and reciprocating piston engines. Water or other liquid medium is injected against one side of a heat transfer boundary and premixed air-fuel fluid is injected against the opposite side of the boundary where combustion becomes self-sustaining. Sub-systems and controls are provided for a complete, operational prime mover functioning on the generated steam.

3,720,189
HEATER AND HOT WATER BOILER
Robert L. Meyers, 104 Blackiston Avenue, Cumerland, Md.
Filed April 9, 1971, Ser. No. 132,696
Int. Cl. F22b *27/08*
U.S. Cl. 122—250 R **2 Claims**



A pump connected to a boiler with cylindrical baffles encircled by coils and a heater unit encircled by hot air from the boiler and also surrounded by water heated from the boiler.

3,720,190
FUEL FEED DEVICES FOR INTERNAL COMBUSTION ENGINES
Andre Louis Mennesson, Neuilly-sur-Seine, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly-sur -Seine, France
Filed May 24, 1971, Ser. No. 146,029
Claims priority, application France, June 5, 1970, 7020853
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **2 Claims**

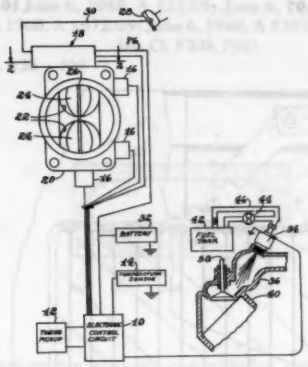


Several valves supplied by a source of fuel under pressure are each actuated by an electromagnet energized over a variable fraction of each revolution of a rotary member driven by the engine. The energizing current passes through a distributor constituted by a light source, two photodiodes and electronic gates, the rotary member allowing the light source to illuminate or not the photodiodes according to its angular position.

3,720,191
ACCELERATION ENRICHMENT CIRCUITRY FOR ELECTRONIC FUEL SYSTEM

Todd L. Rachel, Elmira, N.Y., assignor to The Bendix Corporation, Elmira, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,277
Int. Cl. F02d 5/02
U.S. Cl. 123—32 EA 11 Claims

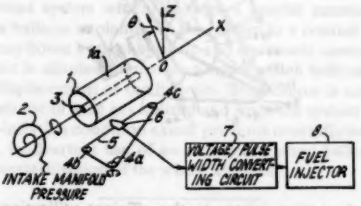


A circuit is disclosed for generation of an output voltage signal having a characteristic which varies as the magnitude, and rate, of change of a setting of a remote control member. The present circuit is comprised of a signal receiving and processing circuit adapted to suitably vary a signal indicative of instantaneous control member setting, and an analog signal generating circuit responsive to the first-mentioned circuit for producing an output and voltage signal having an amplitude proportional to the magnitude, and rate, of change of the output of the processing circuit. A further circuit is provided to produce a single signal of fixed magnitude and variable duration suitable for controlling a single pulse circuit.

3,720,192
CONTROLLING DEVICE FOR FUEL INJECTION OF AN INTERNAL COMBUSTION ENGINE

Shigeo Aono, Yokosuka, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama City, Japan

Filed Sept. 9, 1970, Ser. No. 70,805
Claims priority, application Japan, Oct. 22, 1969, 44/83976
Int. Cl. F02b 3/00; F02m 51/00
U.S. Cl. 123—32 EA 6 Claims

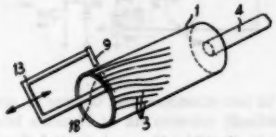


A controlling device for controlling an operation of fuel injection system of an internal combustion engine, comprising an optical means having light absorbing characteristics and a photodetecting means arranged to move relative to said optical means, the optical means has prerecorded optical variation of the light absorbing characteristics corresponding to requested two-dimensional characteristics of the operation of the internal combustion engine, the optical variation is detected by the photodetecting means to produce an electric output voltage to control the injection period of fuel injector to obtain desired output characteristics of the internal combustion engine.

3,720,193
METHOD AND APPARATUS FOR CODING AND READING DATA GOVERNING THE DURATION OF ENERGIZATION OF FUEL INJECTION IN AN INTERNAL COMBUSTION ENGINE

Louis A. Monpetit, Etang-la-Ville, France, assignor to Societe des Procedes Modernes d'Injection Soproml, Les Mureaux, France

Continuation-in-part of Ser. No. 774,362, Nov. 8, 1968, abandoned. This application April 13, 1971, Ser. No. 133,597
Claims priority, application France, Nov. 27, 1967, 129,744
Int. Cl. F02m 51/06
U.S. Cl. 123—32 EA 18 Claims



An arrangement for coding and reading data representing the duration of fuel injection in an internal combustion engine comprising a pulse generator, such as a transparent cylinder driven by the engine shaft and on which are recorded a plurality of series of points distributed in accordance with a hyperbolic law and each series corresponding to pulses to be generated for a predetermined position of the power-controlling means such as the throttle valve in the input manifold of the engine. A detector is shifted under the control of said power-controlling means across said series of points so that at each revolution of the pulse generator a corresponding series of points is detected and transformed into a series of pulses, the interval of time between the pulses depending on the spacing of the points and on the speed of rotation of the said pulse generator, the detected pulses being transformed by a discriminator into a rectangular pulse, the width of which is dependent on the intervals between the detected pulses. The rectangular pulse is utilized to energize an electrically controlled fuel supply system for the duration of said rectangular pulse.

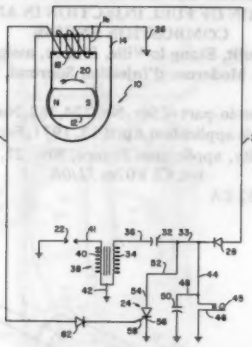
3,720,194
IGNITION SYSTEM

Marion Mallory, Jr., Carson City, Nev., assignor to Mallory Electric Corporation, Carson City, Nev.

Filed May 20, 1971, Ser. No. 145,276
Int. Cl. F02p 1/00
U.S. Cl. 123—148 E 6 Claims

A capacitive-discharge magneto ignition system for internal combustion engines is provided. The magneto output is utilized during one-half cycle to charge a capacitor. During the initial stages of the half cycle, the magneto output is discharged to ground through conventional points. The points are opened at a predetermined voltage level whereupon discharge to ground terminates and the capacitor is charged. The capacitor is connected through the primary winding of a step-up transformer which in turn is connected to a sparking device. A trigger winding is inductively coupled to the magneto winding. The output of the trigger winding is connected to the excitation circuit of an electronic switch which completes a circuit from the capacitor to ground. A voltage is in-

duced in the trigger winding upon collapse of the field of the magneto winding. The magneto winding field collapses when the capacitor is charged. The induced voltage



is sufficient to excite the electronic switch to conduct thus discharging the capacitor through the primary winding of the step-up transformer.

3,720,195

IGNITION SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

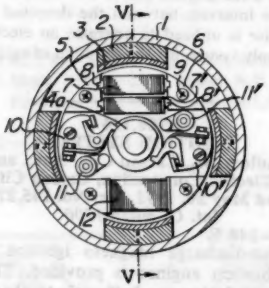
Hideo Fujii, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed March 10, 1971, Ser. No. 122,982

Claims priority, application Japan, March 13, 1970, 45/24814

Int. Cl. F02p 1/02

U.S. Cl. 123—149 D **3 Claims**



An ignition system for multi-cylinder internal combustion engines is disclosed, which comprises a plurality of electrically independent, ignition power generating coils wound on respective main cores arranged side by side along a line at right angles to the rotor shaft of a magnet generator, said main cores being magnetically coupled with a pair of auxiliary cores arranged such that the magnet flux from the magnet pole pieces of said magnet generator pass by these auxiliary cores. The ignition power generating coils are each connected in parallel to an ignition coil and with an interrupter switch.

3,720,196

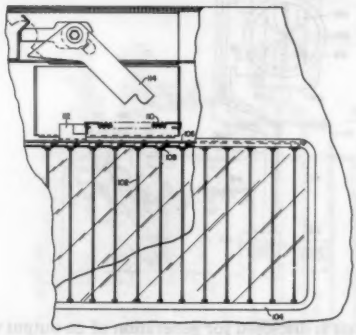
SHUTTER ARRANGEMENT FOR WINDOWED DOOR OF HEAT CLEANING OVEN

Eugene J. Barnett, 1165 Monterey Dr., and Wesley E. Shreffler, both of Mansfield, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 25, 1968, Ser. No. 770,488

Int. Cl. F23m 7/00

U.S. Cl. 126—197 **16 Claims**



The titled apparatus in which a movable shutter arrangement is disposed in the door and connected to the latching means for the door for movement to a closed position when the latching means is operated to a position to initiate a heat cleaning operation of the oven, and is moved to an open position when the latching means is operated back to a position permitting the door to be opened.

3,720,197

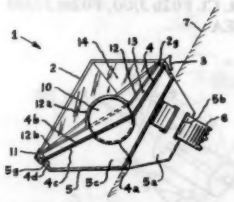
SOLAR ENERGY FOR WARMING OBJECTS, SUCH AS GOLF BALLS AND THE LIKE

John J. Schroth, 19 Buttonwood Drive, Doylestown, Pa.

Filed May 21, 1971, Ser. No. 145,620

Int. Cl. F24j 3/02

U.S. Cl. 126—270 **11 Claims**



This invention relates to the efficient utilization of solar energy, to a practical level, for the warming or heating of objects such as golf balls and the like.

The device is portable and comprises a clear, insulated cover, a black, conductive absorber plate and an insulated carrying base.

Ultra-violet and visible light is admitted and trapped within the casing and is converted to infra-red by the absorber plate. The absorber plate conducts the heat generated, by the conversion to infra-red, through means of intimately contacting pockets containing the objects being warmed.

3,720,198

HEAT STORAGE ELEMENTS, A METHOD FOR PRODUCING THEM AND DEVICES COMPRISING HEAT STORAGE ELEMENTS

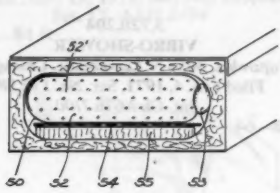
Nikolaus Laing, and Ingeborg Laing, both of Hofener Weg 35-37, 7141 Aldingen bei Stuttgart, Germany

Filed June 4, 1969, Ser. No. 830,457

Claims priority, application Austria, June 6, 1968, A 5389/68; June 6, 1968, A 121/69; June 6, 1968, A 1068/69; June 6, 1968, A 1072/69; June 6, 1968, A 5389/68

Int. Cl. F24h *7/00*

U.S. Cl. 126—400 **16 Claims**



A heat-storing element comprising a storage substance which can absorb latent heat, seed crystals distributed uniformly in said storage substance and a structure which prevents any change of the distribution during the melting phase of the substance.

3,720,199

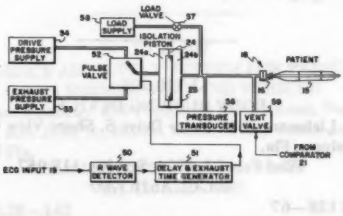
SAFETY CONNECTOR FOR BALLOON PUMP

Michael L. Rishton, Reading, and Armando Federico, Needham, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed May 14, 1971, Ser. No. 143,392

Int. Cl. A61b *19/00*

U.S. Cl. 128—1 D **6 Claims**



An intra aortic balloon catheter assembly for use in a circulatory assist system which includes a special connector for joining a balloon implanted in the patient to a control console which may house both pneumatic and electronic controls. The connector is adapted to provide a signal which indicates volumetric displacement of the balloon. This volume is compared to the volume of load gas utilized and shuts the system down if an over-inflation condition exists, prevents overinflation of the balloon, inadvertent use of an incorrectly sized balloon, and allows presterilization of the whole assembly.

3,720,200

INTRA-ARTERIAL BLOOD PUMP

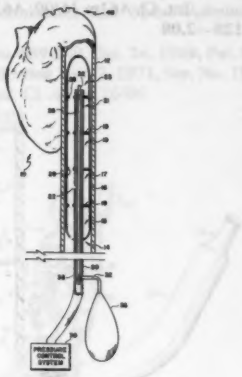
John D. Laird, Rotterdam, Netherlands, assignor to Avco Corporation, Cincinnati, Ohio

Filed Oct. 28, 1971, Ser. No. 193,370

Int. Cl. A61b *19/00, 5/02;* **A61m** *1/00*

U.S. Cl. 128—1 D **7 Claims**

The disclosure illustrates an intra-aortic circulatory assist balloon pump, expanding and contracting in synchronism with a patient's heart rhythm to assist systemic circulation. The balloon pump comprises an elongated elastic membrane having a number of compartments supplied with pressure for expansion from an exterior source via a central tube and orifices between



compartments. A second tube connects one of the end compartments and extends to an exterior flexible capacitance device that preferentially expands relative to the end compartment, thereby preventing "bubble blowing."

3,720,201

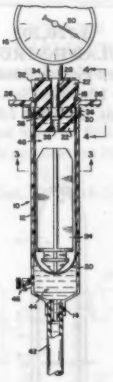
DISPOSABLE BODY FLUID PRESSURE MONITOR

Maynard Ramsey, III, Durham, N.C., assignor to Ramtech, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 881,121, Dec. 1, 1969, Pat. No. 3,648,687. This application Oct. 28, 1970, Ser. No. 84,718

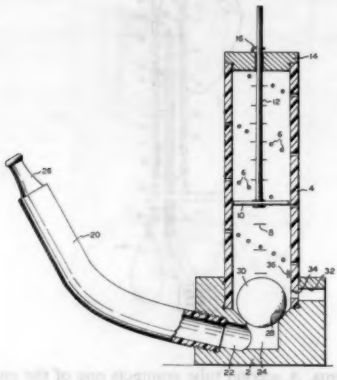
Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 D **8 Claims**



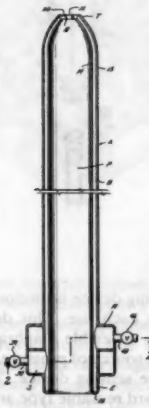
A pressure monitoring device is disclosed which is designed to be discarded after each use. This device utilizes a tube which is separated by a flexible diaphragm. One end of the tube is attached to the source of pressure, and the distal end is attached to a pressure sensing device. The pressure sensing device is of any standard reusable type and it does not require sterilization. The tube and its components are made of inexpensive, sterilizable material and are designed to be disposed of after one use.

3,720,202
INSTRUMENT FOR MEASURING MAXIMUM EXPIRATORY FLOW RATE
James M. Cleary, P.O. Box 541, Falmouth, Mass.
Filed Oct. 5, 1971, Ser. No. 186,663
Int. Cl. A61m *16/00*; A61b *5/08*
U.S. Cl. 128—2.08 8 Claims



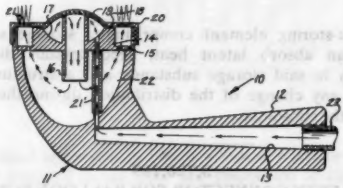
An instrument for measuring maximum expiratory flow rate having a vertically disposed cylinder with a plurality of equal sized orifices distributed along its length, a floating piston disposed in the cylinder having a guide rod passing through a closure on the top of the cylinder, a holdback clip mounted on the cylinder closure and operatively engaging the guide rod to prevent the guide rod from moving downwardly once the piston has moved upwardly in the cylinder and a suitable, flexible air tube having a mouthpiece at one end and connected in open communication with the bottom of the cylinder at its other end. The instrument can also be provided with a check valve at the lower end of the cylinder to prevent backflow of air through the air tube and adjustable port means adjacent the base of the cylinder to adjust the range of the instrument.

3,720,203
TUBULAR INSTRUMENT
John R. Brown, 221 West Parker Road, Houston, Tex.
Filed June 12, 1970, Ser. No. 45,655
Int. Cl. A61b *1/00*
U.S. Cl. 128—4 1 Claim



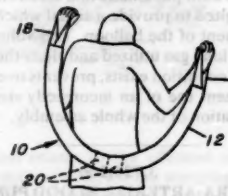
A tubular proctoscope or sigmoidoscope instrument for insertion into a body cavity, such as the rectum or sigmoid colon, with such instrument having a plurality of circumferentially spaced conduits disposed in or adjacent the wall of the tubular instrument so as not to obstruct the main passage therethrough. Some of the conduits are provided for discharging water or other fluids adjacent the tip of said instrument and others of the circumferentially spaced conduits have inlets adjacent the tip of the instrument and are connected to an aspiration device for removing fluid or fecal matter from such body cavity during examination and treatment with the instrument.

3,720,204
VIBRO-SHOWER
Adam S. Wojtowicz, 3055 N. Lawandole, Chicago, Ill.
Filed Feb. 4, 1971, Ser. No. 112,589
Int. Cl. A61h *7/00*
U.S. Cl. 128—64 4 Claims



A shower device for physical therapy. The device includes a rubber diaphragm which is activated by water pressure enabling it to be used in the bathtub as a massaging unit, the device being also adaptable for use by barbers for shampooing and massaging the scalp.

3,720,205
BODY RUBBING DEVICE
Arno J. Liebman, 1819 Shore Drive S. Shore View 218, Saint Petersburg, Fla.
Filed Feb. 23, 1971, Ser. No. 118,057
Int. Cl. A61h *7/00*
U.S. Cl. 128—67 3 Claims



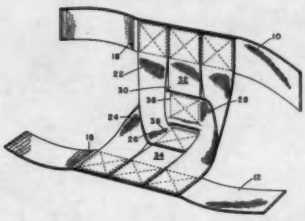
A device for use by a person for rubbing across sections of his body, particularly the back of his body, as for scrubbing, massaging, applying lotions, body creams, and the like, is disclosed. The device includes an elongated tubular liquid absor-

bent main body formed from a limp material. A plurality of longitudinally spaced closed-ended sections are formed along the main body, and are provided with openings for receiving such things as cleansing soap, body lotion and the like. Optional gripping means are provided at the ends of the main body for being grasped by the hands of the user for drawing the device across sections of his body.

3,720,206
ANKLE HITCH

Joseph J. Walker, 955 3rd St., Encinitas, Calif. 92024, and Oran M. Bell, 5623 Dorothy Way, San Diego, Calif. 92115

Filed Nov. 19, 1971, Ser. No. 200,418
Int. Cl. A61f 5/04
U.S. Cl. 128—84 R **8 Claims**

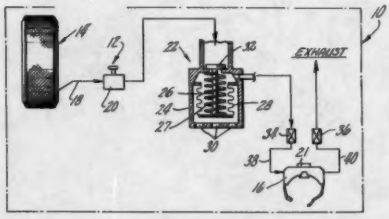


This article, commonly called an ankle hitch is an accessory in lower limb traction splint equipment for attachment on the foot and ankle and enabling securement of the actual tensioning means with a reasonably accurate measurement of the tension applied. The article is constructed so that it can scarcely be improperly applied since it is reversible as to foot and ankle strap attachment with complete non-slip assurance in both positions, a foot-uprighting or lateral support function, and an easily read tensioning scale eliminates guesswork in determining the degree of tension to be applied.

3,720,207
EMERGENCY AIR SUPPLY SYSTEM FOR PASSENGERS OF A SUBMERGED LAND VEHICLE

Alfred Paul Matheny, 616 Prosperity Farms Road, North Palm Beach, and John R. Rahon, 2052 Ardley Road, Juno Isles, both of Fla.

Filed Dec. 2, 1970, Ser. No. 94,483
Int. Cl. A62b 7/00
U.S. Cl. 128—142 **11 Claims**



An available pressurized air source, such as an inflated tire, connectable by appropriate conduit means, with flow control and pressure regulation provisions, through an air transmitter or face mask, to the breathing passages of a passenger in a submerged land vehicle to either provide emergency breathing air for the passenger, or to fill an inflatable and portable air pack which the passenger may leave the vehicle with, or both.

3,720,208
UNDERWATER SPACE SUIT PRESSURE CONTROL REGULATOR

Billy R. Aldrich, Huntsville; Charles R. Cooper, and John R. Rasquin, both of Madison, all of Ala., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

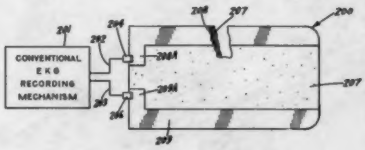
Division of Ser. No. 869,260, Oct. 24, 1969, Pat. No. 3,636,966. This application Nov. 2, 1971, Ser. No. 195,061
Int. Cl. A61m 16/00
U.S. Cl. 128—142.5 **3 Claims**

A device for regulating the pneumatic pressure in a ventilated space suit relative to the pressure imposed on the suit when being worn by a person underwater to simulate space environment for testing and experimentation. A box unit located on the chest area of the suit comprises connections for suit air supply and return lines and carries a regulator valve that stabilizes the air pressure differential between the inside and outside of the suit. The valve and thus suit pressure is controlled by the suit occupant and the valve includes a mechanism for quickly dumping the suit pressure in case of emergency. Pressure monitoring and relief devices are also included in the box unit.

3,720,209
PLATE ELECTRODE

Lee R. Bolduc, Minneapolis, Minn., assignor to Medical Plastics, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. Nos. 711,949, March 11, 1968, Pat. No. 3,543,760, and Ser. No. 866,630, Oct. 15, 1069, Pat. No. 3,642,008. This application Nov. 25, 1970, Ser. No. 92,767
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 E **37 Claims**

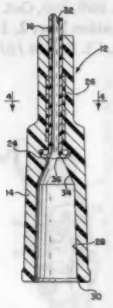


A one-piece disposable electrode having a flat flexible base of non-electrical conductive sheet material. An electrical conductive skin is secured to one side of the base. The skin is divided into separate sections engageable with distinct portions of a body. Clamps and cables are used to attach the electrode to an electrical-surgical machine, an electrocardiograph recording mechanism, or a device coupled to a cardiac catheter.

3,720,210
INDWELLING CATHETER DEVICE

Lambert John Diettrich, Glencoe, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Mar. 3, 1971, Ser. No. 120,418
Int. Cl. A61m 5/00, 25/00
U.S. Cl. 128—214.4 10 Claims

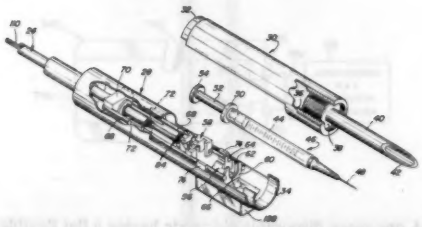


An indwelling catheter device is provided for use in an intravenous catheter placement unit or infusion set to permit the introduction or withdrawal of liquids from a human body. The catheter device includes an elongated flexible tube section of a low friction material, preferably fluorinated ethylene propylene polymers or tetrafluoroethylene polymers, having a tubular, preferably thermoplastic, collar member mounted thereon with an interference fit adjacent an enlarged flange of the elongated flexible tube section. A hub element of a different higher friction material, such as polyethylene, is insert molded over and around the tubular collar member and enlarged integral flange of the elongated flexible tube section to form a unitary catheter device. The heat of the molding operation causes a chemical bonding or fusing of the material of the hub to the material of the collar so as to provide a fluid tight seal between the hub and catheter tube.

3,720,211
AUTOMATIC INJECTION SYSTEM

George M. Kyrias, 330 E. Wakefield, Apt. No. 3, Anaheim, Calif.

Continuation-in-part of Ser. No. 869,484, Oct. 27, 1969, abandoned. This application Aug. 18, 1971, Ser. No. 172,651
Int. Cl. A61m 5/00, 5/22
U.S. Cl. 128—218 A 14 Claims

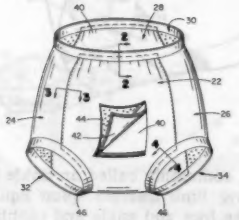


Apparatus for manipulating a hypodermic syringe to automatically administer an injection. The apparatus includes a hand held probe unit within which a loaded hypodermic syringe is placed. Operation of a control switch on the hand held unit will automatically drive the syringe in a cycle in which the syringe needle is seated in the patient's body, the syringe plunger is depressed to expel the charge from the syringe and the syringe needle is automatically withdrawn from the patient. The system may be operated to include an aspirating step between the needle seating and the plunger depressing steps, one embodiment of the invention providing for automatic timing of the aspiration step while another embodiment placing control of the duration of aspiration in the user. The system, in one form, may further provide for adjusting the rate at which the plunger is depressed, to thereby control the rate of injection.

3,720,212
ABSORBENT PANTY

William B. Kaupin, Westwood, Mass., assignor to the William Carter Company, Needham Heights, Mass.

Filed Sept. 9, 1971, Ser. No. 179,125
Int. Cl. A61f 13/16
U.S. Cl. 128—288 4 Claims

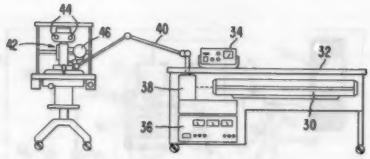


An absorbent panty has good resistance to discoloration and great retention of absorbency over a life of washings by utilizing a crotch insert or interliner fabricated of hydrophilic fibers needle punched into a non-woven spunbonded inelastic hydrophobic fiber sheet.

3,720,213
LASER PHOTOCOAGULATOR

James L. Hobart, Palo Alto, and Steven M. Jarrett, Los Altos, Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed Feb. 5, 1971, Ser. No. 113,026
Int. Cl. A61n 5/06
U.S. Cl. 128—395 8 Claims



A laser photocoagulator for treating a patient's eye comprises a laser, optical means for delivering the output beam from the laser to the desired location in the eye of the patient, and wherein the laser is operated to provide a multi-mode output beam. The use of the multi-mode output laser beam enables the treatment of certain eye diseases while insuring that damage to the cornea and other parts of the eye resulting from the passage of the laser beam is prevented.

3,720,214
SMOKING COMPOSITION

Vello Norman, Chapel Hill, and Herman G. Bryant, Jr., and Thomas Blair Williams, Durham, N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.

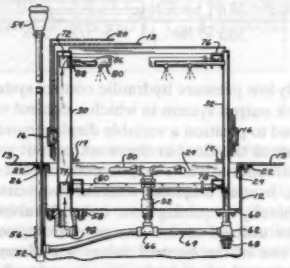
Filed Dec. 3, 1970, Ser. No. 94,949
Int. Cl. A24b *13/00, 15/02*
U.S. Cl. 131—17 11 Claims

A smoking composition comprising tobacco and a catalytic agent for causing a decrease in the yield of polycyclic aromatic compounds arising from pyrolytic reactions of the composition, the agent consisting essentially of finely divided zinc oxide and being associated with the tobacco in the composition.

3,720,215
HOOD STYLE DISHWASHER

Arthur W. Haas, Elgin, Ill., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Nov. 4, 1971, Ser. No. 195,628
Int. Cl. B08b *3/02*
U.S. Cl. 134—165 6 Claims



A hood style dishwasher having a tank and upstanding manifolds united thereto, whereby the tank can be easily secured in place relative to a countertop or the like and rinse or wash water connections made with the manifolds and whereby telescoping curved hoods pivoted together on bearings in turn can be supported on the upstanding manifolds without additional fabrication of the countertop other than for mounting the tank itself.

In restaurants, hospitals, or like institutions it is common to have a sheet metal specialist fabricate a counter for the kitchen area and to mount in an opening in this counter a dishwasher manufactured at a separate location. The installation obviously has to be reliable and according to all safety and sanitation codes. In prior commercial hood style dishwashers, the tank would be mounted from the underside of the counter in line under the counter opening and would be completely sealed to the counter. The telescoping inner and outer hoods each curved over approximately 90° and adapted to cover the tank would then be typically mounted on bearings secured to the topside of the counter. The hoods can be individually opened to provide loading and unloading access of racks from either side of the dishwasher.

3,720,216
METHOD FOR REDUCING THE DYNAMIC DRAG OF A TURBULENT AQUEOUS STREAM

Lloyd H. Wartman, Westport, Conn., and Paul A. King, Tucson, Ariz., assignors to Union Carbide Corporation, New York, N.Y.

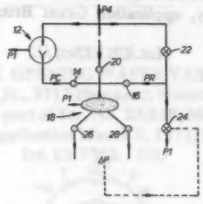
Filed Sept. 27, 1971, Ser. No. 184,241
Int. Cl. F17d *1/16*
U.S. Cl. 137—13 16 Claims

A method for reducing the dynamic drag of a turbulent aqueous stream which comprises contacting said aqueous stream with a solid mass of finely divided material containing an ethylene oxide polymer and a water-soluble organic or inorganic material.

3,720,217
FLUIDIC SYSTEMS

Robert B. Matthews, Chandler's Ford, and Charles M. Fitzmaurice, Fareham, both of England, assignors to The Plessey Company Limited, Essex, England

Filed March 25, 1970, Ser. No. 22,453
Claims priority, application Great Britain, March 25, 1969, 15,475/69
Int. Cl. F15c *1/12, 1/16*
U.S. Cl. 137—81.5 7 Claims

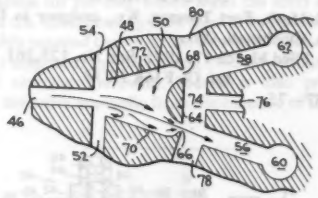


A fluidic control system includes a pair of fluid restrictors connected in series whereby a tapping between them provides an output pressure which is a fraction of the input pressure. A planar jet collector gives an output which is a non-linear function of the input pressure. Thus, when both the jet collector and the orifices or restrictors are supplied with fluid from the same source then their difference in output pressures will vary as a function of input pressure. The output pressure difference is communicated to a fluidic proportional amplifier whose output pressure can be used to control the bleed valve or inlet guide vane of a gas turbine whence the input fluid pressure is derived.

3,720,218
HIGH SPEED DECOUPLED FLUIDIC SWITCHING DEVICE

Tadeusz M. Drzewiecki, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 7, 1971, Ser. No. 205,642
Int. Cl. F15c *1/04*
U.S. Cl. 137—839 5 Claims



A novel construction of a fluidic switching device is disclosed, the construction effecting high speed decoupled operation. In the preferred inventive embodiment, the novel construction comprises a modification of a conventional fluidic switching device of the type including an input nozzle, a wall-attachment interaction chamber, and a plurality of output receiver lines, wherein a splitter of rounded convex shape is disposed downstream in the interaction chamber between the plurality of output receiver lines, wherein constrictions are provided to either side of the splitter between the interaction chamber and each respective output receiver line, wherein vent channel means are disposed behind and downstream of

the splitter and the constrictions communicating with each output receiver line and coupling each output receiver line to a common vent, and wherein additional decoupling vents are disposed downstream of the constrictions in each output receiver line. This novel construction has the effect of eliminating the receiver line and downstream impedance to switching and specifically removes the vortex in the attachment region and the receiver line inductance.

3,720,219

FLUID LOGIC ARRANGEMENTS

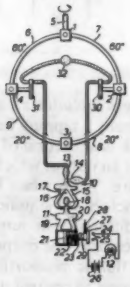
Guy Edward Davies, Fareham, England, assignor to Plessey Handel und Investments A.G., Gartenstrasse, Switzerland

Filed Dec. 2, 1970, Ser. No. 94,328

Claims priority, application Great Britain, Dec. 4, 1969, 59,170/69

Int. Cl. F15c *1/12*

U.S. Cl. 137—804 **10 Claims**



A fluid monitoring arrangement for giving a warning of deterioration or failure in a drive system which will maintain a required drive in spite of said deterioration or failure. The deterioration or failure is indicated by relative movement between two parts of the drive system, each part having associated with it an intermittent supply of fluid. The fluid is supplied to fluid logic means and the fluid logic means provides an output indicative of the relative movement of the two parts and hence of any failure or deterioration in the system.

3,720,220

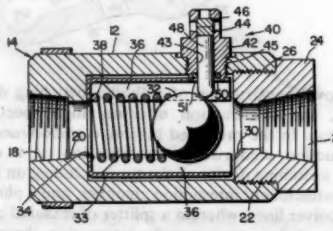
SAFETY VALVE

Jack A. McMath, Fort Thomas, Ky., assignor to Dover Corporation, Cincinnati, Ohio

Filed March 17, 1971, Ser. No. 125,261

Int. Cl. F16k *17/38*

U.S. Cl. 137—75 **2 Claims**



A safety valve for preventing the flow of materials therethrough in the presence of a predetermined external temperature condition is disclosed. A fusible plug maintains a spring-biased closure member out of contact with a seat in the outlet path. Upon melting of the fusible material, the closure member is released and urged into contact with the seat in the outlet path to prevent any further flow of material therethrough.

3,720,221

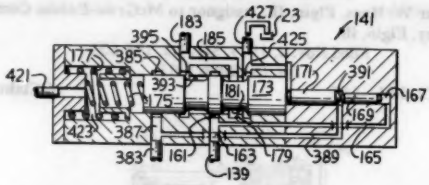
HIGH PRESSURE IMPLEMENT HYDRAULIC CIRCUIT

John L. Hufeld, Peoria; Donald J. Larson, Joliet; Howard A. Marsden, Pekin; James P. Mueller, East Peoria, and William B. Norick, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 868,964, Oct. 21, 1969, Pat. No. 3,575,000. This application Jan. 4, 1971, Ser. No. 103,869

Int. Cl. F16k *31/12*

U.S. Cl. 137—112 **4 Claims**



A relatively low pressure hydraulic control system for a high pressure work output system in which a control valve is selectively actuated to position a variable displacement axial piston pump to control the flow in the work output system and to position a directional valve which controls the direction of work output. In such a system wherein two work outputs are provided, thereby requiring two control valves, a priority valve may be utilized in the low pressure system so that a signal from one of the control valves will always override a signal from the other control valve in controlling the axial piston pump.

3,720,222

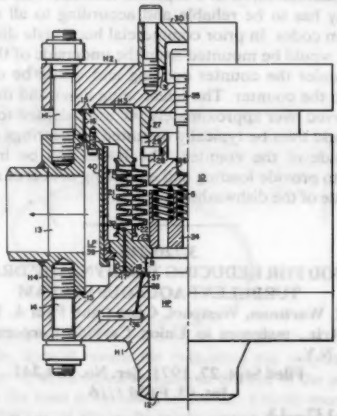
FLUID PRESSURE REGULATING AND CONTROL DEVICE

Harry N. Andrews, Export; Erling Frisch; Norman R. Singleton, both of Pittsburgh, and Phillip C. Stein, Lansdowne, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 27, 1971, Ser. No. 193,114

Int. Cl. F16k *33/36*

U.S. Cl. 137—154 **20 Claims**



A controlled leakage device is provided which can control the flow of fluid out of a chamber over a wide range of fluid conditions, i.e., from subcooled liquid to superheated vapors. A hydrostatic balancing system is utilized to cause the seating

force on a pressure barrier member to be related to the lifting force on the barrier member. Thus, the device can be constructed to remain in balance over the large change in lifting force that results when the fluid changes phase. Possible applications for the device include safety and relief valves for pressurizers, steam generators and boilers, and shaft seals.

3,720,223

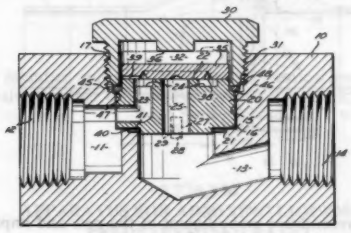
SEAL CONSTRUCTION FOR STEAM TRAPS

Allan R. Goellner, Parma Heights, Ohio, assignor to The Clark-Reliance Corp., Cleveland, Ohio

Filed April 12, 1971, Ser. No. 133,201

Int. Cl. F16t *1/16*

U.S. Cl. 137—183 **6 Claims**



A steam trap having an improved means for sealing a control chamber within the body of the trap, particularly with respect to the inlet and outlet passages. The body of the trap has a bore with a threaded counterbore and the bore receives a cylindrical valve seat element. A beveled annular shoulder is formed between the bore and the counterbore and an adjacent beveled annular shoulder is formed in the seat so that the two shoulders together form a V-shaped annular groove that receives a radially expansible annular metal sealing gasket with a convexly curved bottom surface. The bottom surface of the gasket bears initially, when unflexed, against only the shoulder in the seating element. However, when the gasket is forced downward and outward during assembly of the trap, it is rolled and radially expanded into continuous sealing engagement with the shoulder formed between the bore and counterbore as well as with the shoulder of the valve seat element.

3,720,224

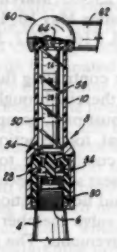
TIRE PRESSURE INDICATOR AND INFLATION DEVICE

Ollie C. Foxhall, Bethany, Okla., assignor to Joco Incorporated, Oklahoma City, Okla.

Filed Dec. 18, 1970, Ser. No. 99,631

Int. Cl. B60c *23/04*; F16k *37/00*

U.S. Cl. 137—227 **3 Claims**



A tire pressure indicator and inflation device which includes an outer housing having a bore and counterbore formed therein, and an internal housing positioned in the bore of the outer housing. The internal housing is constructed of resilient material, and has an internally threaded hollow interior for connecting the internal housing to the stem of the valve of a pneumatic tire. The internal housing is generally cylindrical in shape and is resiliently collapsible in an axial direction. The internal housing has an end plate which extends across and closes one end thereof and which carries a valve core depressor element. An elongated pressure indicator element carrying a piston at one end thereof is slidably mounted within the bore of the outer housing so that the piston seals against the internal wall of the outer housing in the bore. The piston and associated pressure indicator element are biased by a spring positioned between the piston and an internal shoulder on the outer housing to a position adjacent the internal housing.

3,720,225

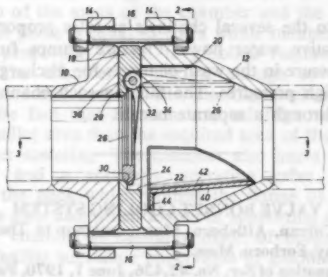
FULL OPENING WAFER VALVE

Thomas Wheatley, Jr., 3717 Pinemont, Houston, Tex.

Continuation-in-part of Ser. No. 23,818, March 30, 1970, abandoned. This application March 8, 1971, Ser. No. 121,877

Int. Cl. F16k *15/03*

U.S. Cl. 137—268 **6 Claims**



A full opening valve of the swinging disk type having a valve housing or casing formed with an internal recess into which the disk is movable when the valve is opened to provide full opening of the flowway, the valve housing having internal means providing a guiding surface for balls, pipeline pigs, or the like, to eliminate internal projections in the flowway and to allow such objects to pass freely through the valve without becoming stuck in the valve. The valve is constructed with support means for the disk which takes the form of a ring or wafer, and the valve housing is formed in two parts adapted to be releasably secured together and between which the wafer is removably disposed, the disk being pivotally mounted on the wafer for removal therewith. Means is also provided for operating the valve manually from the exterior of the housing.

3,720,226

VEHICULAR MOUNTED WASH APPARATUS

Paul R. Minich, Jr., Washington, D.C., and Donald E. Shaver, Fort Worth, Tex., assignors to C & M Manufacturing Company, Inc., Bethesda, Md.

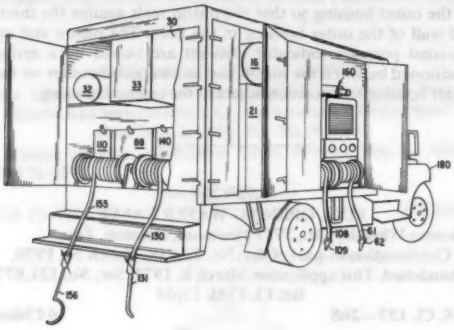
Filed Aug. 6, 1970, Ser. No. 61,576

Int. Cl. F16k *49/00*

U.S. Cl. 137—334 **7 Claims**

A wash apparatus suitable for vehicular mounting has a water tank from which water is directed to a main for distribution to duplexed wash channels, duplexed rinse channels, a brightener channel, and a steam channel. A pump propels water in the main through a heater and a

bypass and delivers hot or cold water to any or all of the channels. The wash channels are capable of discharging hot wash fluid while the rinse channels simultaneously discharge cold rinse fluid. Detergent, wax, and acid are



supplied to the several channels at rates proportional to the respective water flows. Pressure pumps further increase pressure in the wash channels for discharging wash fluid at high pressures. The fluid in each channel is discharged through a separate nozzle.

3,720,227

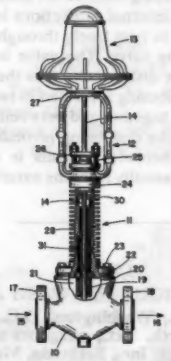
VALVE BONNET COOLING SYSTEM

John R. Curran, Attleboro, Mass., assignor to The Foxboro Company, Forboro, Mass.

Continuation of Ser. No. 42,426, June 1, 1970, Pat. No. 3,648,718. This application Jan. 24, 1972, Ser. No. 220,272

Int. Cl. F16k *49/00*

U.S. Cl. 137—339 **19 Claims**



A valve bonnet cooling system for protecting valve stem packing therein and actuating equipment mounted on the bonnet from damage or excessive wear caused by heat transfer along and around the stem and bonnet when the valve is used to control high temperature high pressure fluids such as superheated steam.

3,720,228

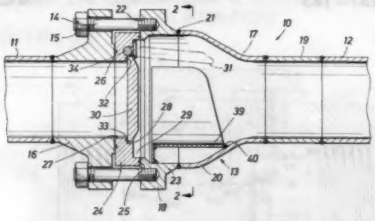
FULL-BORE PIPELINE CHECK VALVES ADAPTED FOR REARRANGEMENT INTO ALTERNATIVE BODY STYLES

Thomas Wheatley, Jr., 8015 Meadowglen, Houston, Tex.

Continuation-in-part of Ser. No. 121,877, March 8, 1971, which is a continuation-in-part of Ser. No. 23,818, March 30, 1970, abandoned. This application Nov. 19, 1971, Ser. No. 200,480

Int. Cl. F16k *15/03*

U.S. Cl. 137—454.2 **17 Claims**



As a representative embodiment of the new and improved full-opening pipeline valve disclosed herein, a tubular valve body is formed of three separable full-bore members adapted to pass pipeline pigs and having a combined axial length corresponding to the standard overall length established by industry for both flanged and weld-end valves of that pipe size and pressure rating. The body members can be alternatively arranged into either of two body styles to enable the full-opening valve to be either welded into a pipeline or bolted into position between a spaced pair of opposed pipeline flanges. The body members include an annular member carrying a pivoted valve disc, with this body member being uniquely adapted to be clamped between a flanged body member and either another flanged body member or a pipeline flange depending upon which body style is required for mounting the full-bore valve in a given pipeline. In either of these body styles, the unique annular body member is wholly confined within the flange bolts so that this body member can be conveniently removed or the pivotally-supported valve disc may be selectively oriented to different angular positions as required to assure the passage of pipeline pigs by simply loosening the flange bolts and rotating the annular body member in relation to the other body members.

3,720,229

VALVE ASSEMBLY

Narinder Masson, Jersey City; William John Korenicki, Linden, and Walter Ludwig Lechner, New Providence, all of N.J., assignors to Gamon-Camet Industries of Inc., Newark, N.J.

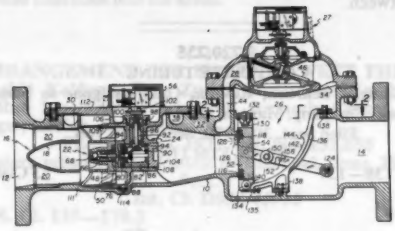
Division of Ser. No. 23,355, March 27, 1970, Pat. No. 3,677,084. This application May 10, 1971, Ser. No. 142,345

Int. Cl. F16k *17/12, 31/44*

U.S. Cl. 137—527.8 **19 Claims**

A valve assembly, for controlling fluid flow through a conduit having a valve seat therein through which flow to the outlet end of the conduit must pass, comprising: a valve member for sealing said valve seat, toggle action means mounting said valve member in said conduit for toggle action movement between a closed valve seat sealing position and an open valve seat non-obstructing fluid flow position and, guide means for positively guiding said valve member through its valve seat opening and closing movements. The guide means comprises cam follower means mounted on said valve member and stationary cam means cooperating with said cam follower means for guiding said valve member through its said valve seat opening and closing movements. The cam means comprises a

generally vertically disposed ramp-like member including an initial vertical portion defining the fully closed position of said



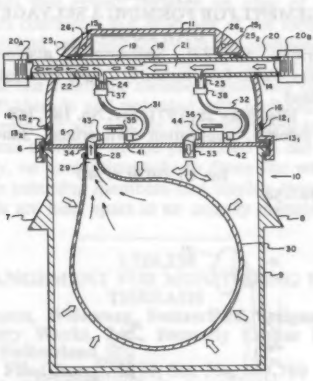
valve member and permitting limited vertical movement of said valve member while in its fully closed position.

3,720,230

APPARATUS FOR ADMIXING LIQUIDS IN PREDETERMINED RATIO

Perry H. Miller, Mehdif Sabbaghian, Calvin A. Stockstill, all of Baton Rouge, La., assignor to Coronet Manufacturing Company, Inc., Baton Rouge, La.

Filed April 14, 1971, Ser. No. 134,005
Int. Cl. E03b 7/07
U.S. Cl. 137—564.5 **10 Claims**



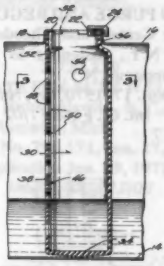
Apparatus for adding measured quantities of concentrates or solutions, e.g., particularly fluoride salt solutions, to a second liquid, e.g., fresh water as supplied by municipalities to ordinary residences. The apparatus is particularly adapted to be fitted into a conduit carrying a supply of fresh water to a source to be supplied with fluorinated water, e.g., a residence. It is constituted generally of an outer vessel within which a tubular flow nozzle is enclosed. The nozzle is provided with high pressure and low pressure sides, and lateral outlets from such high and low pressure sides. A flexible bag containing, e.g., a fluoride solution for injection into the fresh water, can be operatively connected to the low pressure outlet, while the external portion of the bag is placed under the influence of the high pressure outlet such that when fresh water is passed through the nozzle the differential pressure causes solution to be metered via the low pressure outlet into the axial opening within the tubular flow nozzle where it is picked up, admixed or dissolved within the fresh water, and dispensed through the conduit as fluorinated drinking water.

3,720,231

ADD-ON OIL-FUEL METERING DEVICE

Fortunato S. Ajero, 521 S. Rawson Court, South Milwaukee, Wis. 53217

Filed Dec. 20, 1971, Ser. No 209,822
Int. Cl. F16k 3/24
U.S. Cl. 137—576 **9 Claims**



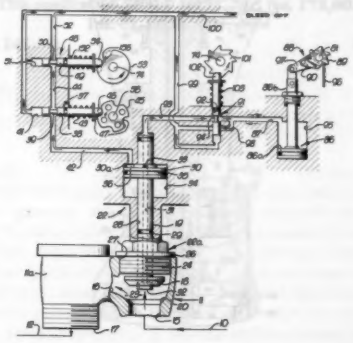
This application relates to an accessory for a gasoline tank, for a two stroke cycle engine of a type which uses a mixture of gasoline and oil. The accessory is a flexible chamber inserted through the filler neck of the tank. The ratio of the areas of the chamber and the tank in a horizontal plane is equal to (or a whole number quotient of) the proportion of oil to gasoline required by the engine. The chamber is flexible enough to permit it to be folded and inserted into the filler neck of the can despite the fact that the conventional filler neck has a much smaller area than the required area of the chamber for proper metering. The chamber also has a simplified structure and a vertically operating valve insertable through the neck which utilizes the flange of the filler neck as a stop and which assists in supporting the chamber. The chamber is desirably made of neoprene or a similar flexible substance impervious to gasoline and oil.

3,720,232

FLUID PRESSURE RESPONSIVE VALVE CONTROLLER

Robert F. Corliss, Hacienda Heights, and Frank Wilkinson, Chatsworth, both of Calif., assignors to said Corliss, by said Wilkinson

Filed April 20, 1971, Ser. No. 135,729
Int. Cl. F16k 31/36
U.S. Cl. 137—624.14 **13 Claims**



A water pressure energized controller for a main valve through the body of which system water supply is to be controlled, comprises:

a. a housing attached to said body,

b. valving means projecting from the housing for installation

and movement within the body to control water flow in the system, and

c. control means carried by the housing and responsive to system water pressure to cycle the movement of said valving means at predetermined time intervals.

3,720,233

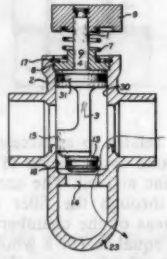
COMBINATION PURGE AND REGULATING VALVE

Ira Shur, Rockville Center, and Theodore Mulle, Jr., Huntington, both of N.Y., assignors to Flair Manufacturing Corporation, Hauppague, N.Y.

Filed Sept. 17, 1970, Ser. No. 72,939

Int. Cl. F16k *11/02*

U.S. Cl. 137—625.17 **8 Claims**



A purge and balancing valve having a valve body with a purge opening and a vane type valve member adapted to rotate in a balancing position between fully open and fully closed and when closed being adapted to move to a purging position where communication between the purge opening and one side of the valve is established. The valve is capable of purging in either direction and is designed to prevent inadvertent movement to the purging position.

3,720,234

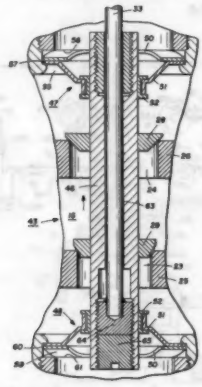
DOUBLE SEATED REGULATING VALVE

Joseph E. Gorgens, Trumbull, and Robert D. Bissell, Orange, Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 24, 1971, Ser. No. 118,262

Int. Cl. F16k *1/44*

U.S. Cl. 137—625.36 **15 Claims**



A double seated valve having an axially moveable tubular disc stem. The stem supports two pre-spaced closure discs opposite the respective valve seat with which each disc is to cooperate in the regulation of fluid flow. A coaxially mounted regulator operating rod extends from without the valve bonnet to a stem connection within the tube thereof. Radial clearance between the tube wall and rod for their coextensive length from the point of connection flexibly accommodates relative axial offset therebetween.

3,720,235

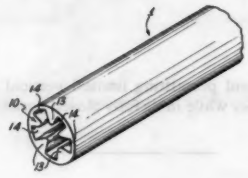
COMPOSITE TUBING

James Douglas Schrock, Ravena, Ohio, assignor to Samuel Moore & Company, Mantua, Ohio

Filed Sept. 30, 1970, Ser. No. 76,766

Int. Cl. F16l *11/04*

U.S. Cl. 138—137 **3 Claims**



A tube adapted to convey fluids under pressure and to be distorted without kinking and blocking of fluid flow therethrough has a resinous core tubing provided with internal longitudinal ribs. The tube is provided with a fibrous reinforcing member disposed about the core tube and an outer sheath if it is to convey fluids under pressure of 500 p.s.i. or more.

3,720,236

ARRANGEMENT FOR FORMING A SELVAGE FOR USE ON A LOOM

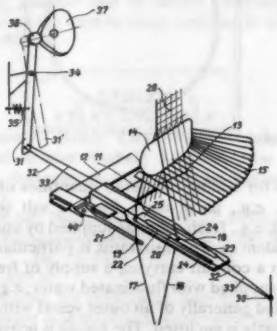
Edgar Strauss, Ruti/ZH, Switzerland, assignor to Ruti Machinery Works Ltd., formerly Caspar Honegger, Ruti/ZH, Switzerland

Filed May 28, 1971, Ser. No. 147,748

Claims priority, application Switzerland, June 4, 1970, 8362/70

Int. Cl. D03d *47/40*

U.S. Cl. 139—54 **12 Claims**



A selvage forming arrangement for use on a loom, wherein two selvage threads of a fabric warp are guided in eyelet means during weaving to produce shed forming movements in which the threads pass one another and are periodically crossed one over another by movement imparting means having thin, elongate thread positioning elements that extend transversely of at least one of the selvage threads, these elements being movable transversely, i.e., laterally of the shed forming movement of the eyelet means, with the first of the

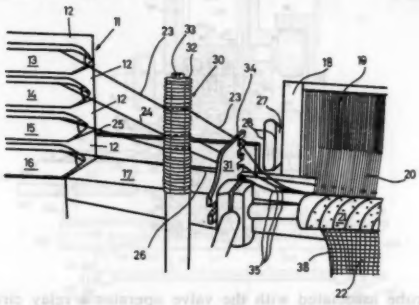
selvage threads being alternately movable into register with one and the other of a pair of guide slots disposed one on each side of the second of the two selvage threads, so that these threads provide a selvage when woven up with successive weft thread insertions into the sheds.

3,720,237

ARRANGEMENT FOR HOLDING WEFT THREADS

Rachid Keldany, Egg, Zurich, Switzerland, assignor to Ruti Machinery Works Ltd., formerly Caspar Honegger, Zurich, Switzerland

Filed June 10, 1971, Ser. No. 151,855
Claims priority, application Switzerland, June 19, 1970, 9,313/70
Int. Cl. D03d *43/10*
U.S. Cl. 139—170.3 **7 Claims**



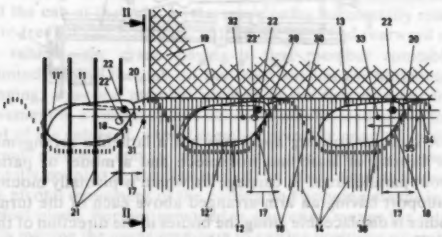
An arrangement to be used in a loom for holding the weft threads that extend between an edge of the fabric and shuttles contained in a drop box of the loom, wherein first and second retaining members are positioned on one side of the sley between the drop box and the edge of the fabric with the retaining members extended transversely of the weft threads and provided with a ribbed profile so that a stream of air can be directed towards the weft threads from a blower nozzle positioned on the other side of the sley, so as continuously to force the weft threads against the retaining members and tension them whereby the threads are held apart in an orderly manner.

3,720,238

ARRANGEMENT FOR MONITORING WEFT THREADS

Edgar Strauss, Widenweg, Switzerland, assignor to Ruti Machinery Works, Ltd., formerly Caspar Honegger, Zurich, Switzerland

Filed June 3, 1971, Ser. No. 149,700
Claims priority, application Switzerland, June 12, 1970, 8,883/70
Int. Cl. D03d *51/34*
U.S. Cl. 139—12 **7 Claims**



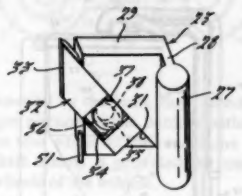
An arrangement for monitoring the weft threads during their insertion into a shed of a wave-like shed loom by means of a weft-thread inserting element which, during its insertion movement is guided loosely in a guide means in which the difference occurring at a monitoring point between the position of said inserting element when the thread is loose or broken, and the position of said inserting element when operations are proceeding in the proper manner, serves as a criterion for the detection of the presence of a loose or broken weft thread carried by a weft thread inserting element.

3,720,239

ADJUSTABLE GATE FOR BUTT WELDING MACHINE

Walter J. Rozmus, Hubbardsville, N.Y., assignor to Kelsey-Hayes Company, Romulus, Mich.

Division of Ser. No. 794,171, Jan. 27, 1969, Pat. No. 3,613,984. This application Jan. 29, 1971, Ser. No. 110,894
Int. Cl. B21f *23/00*
U.S. Cl. 140—2 **2 Claims**



A multiple upset pressure welding apparatus particularly adapted for cold welding wire ends together. The mechanism includes pairs of dies that are supported for relative movement toward and away from each other with the dies of the pairs also being relatively movable toward and away from each other. Gates or restraining devices are juxtaposed to each of the pairs of dies for permitting movement of the wires toward each other during the welding process and for precluding reverse movement of the wires when the pairs of dies are retracted. The restraining gates are adjustable so as to accommodate different size wires and to permit gripping of the wires adjacent the respective dies.

3,720,240

METHOD OF PREPARING INTRAVENOUS FEEDING CONTAINERS

Newell John Gardner, 11661 San Vicente Boulevard, Los Angeles, Calif.

Division of Ser. No. 846,777, Aug. 1, 1969, Pat. No. 3,648,697. This application Sept. 7, 1971, Ser. No. 178,008
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—9 **4 Claims**

Sterile water in a drum communicates through a tube with a flexible container body in which a dry water soluble intravenous feeding material has been placed, the interior of an initially deflated flexible bag in the drum being subjected to air pressure to force sterile water in the drum and externally of

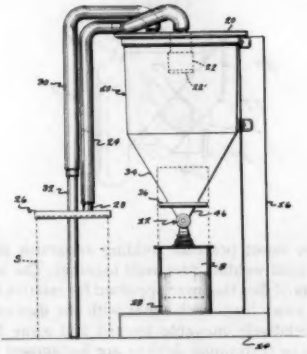
the flexible bag through the tube into the flexible container body to contact the water soluble material and form an intravenous feeding solution in the container body.

3,720,241

MEANS FOR FEEDING FLOWABLE PARTICULATE MATERIAL

John C. Bryant, Fort Mill, S.C.; James Keith Turner, Lincolnton; James R. Riley, Stanley, both of N.C., and Christoph W. Aurich, Clemon, S.C., assignors to Gaston County Dyeing Machine Co., Stanley, N.C.

Filed Sept. 21, 1970, Ser. No. 73,902
Int. Cl. B65b *1/04*; B65g *53/04*
U.S. Cl. 141—25 **7 Claims**



A feeding means for handling flowable particulate material, and particularly adapted for dealing with textile processing chemicals of powder, crystalline or pellet form. The feeding means is of the type which includes a hopper for loading with the material to be fed and a feed mechanism for receiving such material from the hopper and feeding the same, and the arrangement features a closed system for loading the hopper from a supply of the material to be fed that employs a first conduit through which air is drawn from the hopper to a material supply enclosure and a second conduit that is projectable within the enclosure to reach the material supply therein and that leads therefrom to the interior of the hopper.

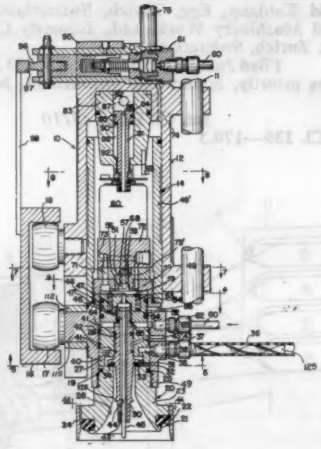
3,720,242

CONTAINER FILLING APPARATUS

Kenneth F. M. Friendship, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,895
Int. Cl. B67c *3/06*
U.S. Cl. 141—6 **24 Claims**

An apparatus for filling carbonated liquids into containers which is characterized by a tubular housing with a downwardly opening upper member in which a lower member is mounted in slidingly telescoping relation. The lower member has a container top engaging and sealing bell on the bottom end and houses a hollow fluid product distributor in which there is a product control valve depending from an air operated piston which is slidable in the lower housing member above said product distributor. A valve controlled counterpressure line is connected to a side wall inlet port which leads to a space between the piston and the product distributor and which connects with passageways leading through the product control valve and into the container. A cam operated valve controlled product supply line is connected to an inlet port in the lower housing member and through a passageway in the product distributor to a recess in which the product control valve operates. A light compression spring normally holds the product valve closed and the product also exerts closing pressure on the valve when the product line is opened until counterpressure operating on the valve piston overcomes the combined pressure of the spring and product and opens the valve.



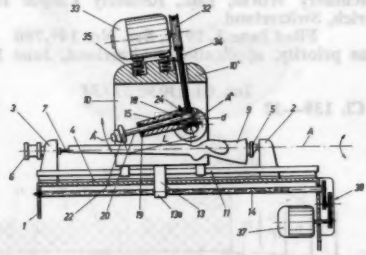
A probe associated with the valve operates a relay circuit when a predetermined level of fill is reached and opens the air pressure line for closing the product valve while the counterpressure line is closed by cam operation of its control valve. A flow restrictor device is placed in the product supply line immediately adjacent the inlet port for producing extreme turbulence and high pressure drop in the liquid which minimizes foaming.

3,720,243

CONTOUR-COPYING APPARATUS

Erich Schmidt, Vienna, Austria, assignor to Maschinefabrik Zuckermann Komm. Bes., Vienna, Austria

Filed June 21, 1971, Ser. No. 154,791
Claims priority, application Austria, July 8, 1970, A6184/70
Int. Cl. B23b *3/28*
U.S. Cl. 142—7 **8 Claims**



A contour-copying apparatus has a lathelike arrangement for turning at least one workpiece and a model or pattern about parallel axes. A carriage on which is pivotally mounted a support having an arm arranged above each of the turning bodies is displaceable along the bodies in the direction of their rotation axes. Journaled in each arm is a longitudinally fixed but rotatable spindle with the spindle over the model carrying a feeler and the arm over the workpiece carrying a cutting tool. The tool-carrying arm or arms has on its other end a

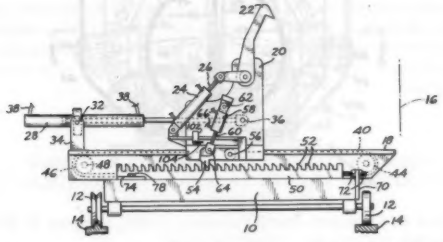
driven pulley overy which is spanned a V-belt also engaged over a drive pulley on a motor mounted on the carriage. The V-belt engages the driven pulley over a contact arc, and the support is pivotal on the carriage about an axis which lies in a plane defined by this arc while extending orthogonally to the body axes and through the belt. Thus, only the weight of the spindle and its arm is effective against the workpiece and model since the drive forces are applied directly and only at the pivot axis.

3,720,244

SAWMILL CARRIAGE SETWORKS

Mark E. Lawrence, Oswego, and William C. Beecroft, Springfield, Oreg., assignors to Mark 50 Machinery Sales, Inc., Aurora, Oreg.

Filed Jan. 20, 1971, Ser. No. 107,973
Int. Cl. B27b *29/10*
U.S. Cl. 83—523 **6 Claims**



A sawmill carriage, mounted for reciprocation parallel to the plane of a saw, supports a plurality of knees for reciprocation perpendicular to the plane of the saw each by means of an elongated fluid pressure piston-cylinder unit. Each knee is secured in selected positions of adjustment releasably by a fluid pressure powered pawl mounted on the knee and engageable with the teeth of an elongated rack extending parallel to the line of movement of the knee. Operation of the carriage, knees and pawls is controlled from a position remote from the carriage.

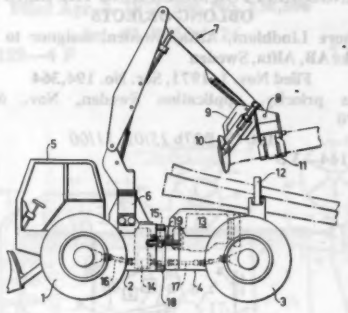
3,720,245

TREE HARVESTING VEHICLE

Erich Puna, Gavle, Sweden, assignor to Brundell Och Jonsson AB, Gavle, Sweden

Filed Nov. 26, 1969, Ser. No. 880,180
Claims priority, application Sweden, Dec. 16, 1968, 6817202
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D **2 Claims**

An articulated tree harvesting vehicle having a tree cutting and hoisting crane mounted on the front section thereof behind the cab of the vehicle. the crane being horizontally rotable to tree cutting positions, at least forward and rearward of the vehicle, the crane having a first member rotatably mounted behind the cab on the front section for horizontal swinging, a second member pivoted to the first member for movement in a vertical plane about an axis located above the level of the cab roof, a third member pivotally coupled to the second member and a tree cutting and gripping means pivotally coupled to the free end of the third member to provide pivotal movement of the cutting and gripping means in a vertical plane. Further provided is operating means for relatively moving the crane members to cutting positions whereby the cutting means cuts in a substantial horizontal plane below the gripping means, the gripping means maintaining the tree in a substantially vertical direction during the cutting operation and carrying the tree to a loading position in a bunk which is in the rear section behind the motor of the vehicle. The uppermost extremity of the motor is approximately at, or below, the level of the lowermost load engaging portion of the bunk, so that the load carried by the bunk can extend over the motor. At least a major portion of the bunk is within the horizontal diameter of the rear wheel on the rear frame section. Steering and carden shaft means is provided for transmitting motor power to the wheels of the vehicle.

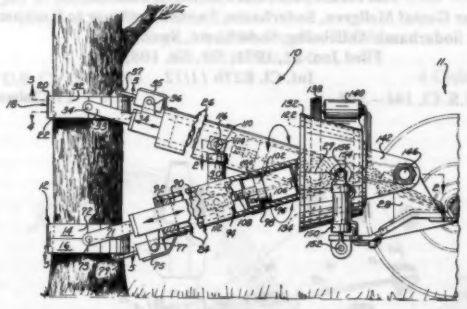


3,720,246

METHOD AND APPARATUS FOR HANDLING TREES

Emil J. David, Woodstock, Ontario, Canada, assignor to Eaton Yale & Towne Canada Limited, London, Ontario, Canada

Filed May 3, 1971, Ser. No. 139,625
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D **9 Claims**



A method and apparatus for harvesting trees includes provision for removing the limbs from a tree and cutting the delimbed tree into logs. The method and apparatus can operate on standing trees or felled trees. In the performance of the delimbing and cutting operation, the tree is gripped at one end with a gripper-shear mechanism. If the tree is standing, the shear cuts the tree at the base of the tree. In both operations, namely, where the apparatus is working on a standing or on a felled tree, a delimbing mechanism is moved along a first length of the tree to delimb that first length of the tree while the tree is supported by the gripper-shear mechanism and the delimbing mechanism. The gripper-shear mechanism is subsequently moved to a position adjacent to the delimbing mechanism so that the gripper-shear mechanism is positioned

a predetermined length from one end of the tree. The gripper-shear mechanism is then actuated to cut the tree so that a log having a predetermined length is produced thereby.

3,720,247

ARRANGEMENT FOR MEASURING THE LENGTH OF OBLONG OBJECTS

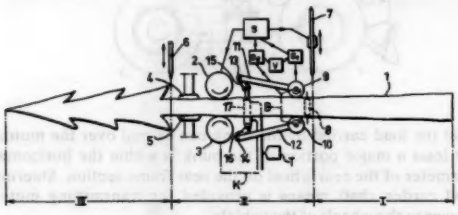
Karl Thore Lindblom, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Alfta, Sweden

Filed Nov. 1, 1971, Ser. No. 194,364

Claims priority, application Sweden, Nov. 6, 1970, 15034/70

Int. Cl. B27b *25/02, 31/00*

U.S. Cl. 144—3 D 5 Claims



This invention relates to the measuring and cross-cutting of tree stems advanced by feed rolls. Upstream of the cross-cutting member two measuring rollers are pressed resiliently against the stem in diametrically opposed places. One of the measuring rollers is connected to a transmitter for signaling the stem length corresponding to the rotation of the measuring roller to a control unit. When a desired stem length has been achieved, the control unit stops the feed rolls and starts the movement of the cross-cutting member against the stem.

3,720,248

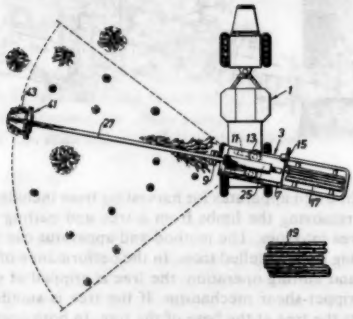
APPARATUS FOR FELLING TREES

Per Gustaf Mellgren, Soderhamn, Sweden, assignor to Kockum Soderhamn Aktiebolag, Soderhamn, Sweden

Filed Jan. 21, 1971, Ser. No. 108,385

Int. Cl. B27b *11/12*

U.S. Cl. 144—34R 11 Claims



An apparatus for felling trees has an elongated beam carrying a saw-blade, a means for moving the beam back and forth with respect to the tree, and a counter-piece adapted to be moved to compress a tree trunk between it and the saw-blade.

3,720,249

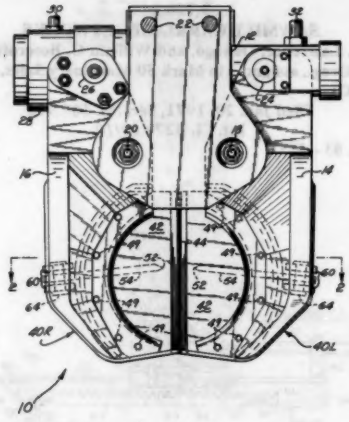
TREE HARVESTING SHEAR

Ahti Peltonen, Reesor, Ontario, Canada, assignor to Eaton Yale & Towne Canada Limited, London, Ontario, Canada

Filed Mar. 12, 1971, Ser. No. 123,649

Int. Cl. A01g *23/08*

U.S. Cl. 144—309 AC 7 Claims



A blade for a tree harvesting mechanism includes a first cutting edge disposed in a generally horizontal plane and a second cutting edge disposed in generally vertical plane immediately below said first cutting edge. The second cutting edge thereby being effective to split the stump of said tree simultaneously as said first cutting edge shears the trunk of said tree.

3,720,250

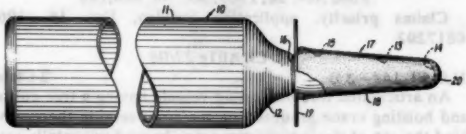
SAFETY DEVICE WHEN OPENING AMPOULES

Raymond Goldberg, East Meadow, and Irving F. Shaw, East Rockaway, both of N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,132

Int. Cl. B65d *65/02*

U.S. Cl. 150—52 R 6 Claims



Safety device in the form of a finger protector for grasping the removable end of flame-sealed ampoules and the like in the opening thereof comprising an elongated body of essentially conical contour having at one end thereof an outwardly extending circumferential flange, and at the other end thereof a rounded portion at least partially closing said end, said first named end having on the inner surface thereof, closely spaced from said outwardly extending flange, a plurality of circumferentially spaced projections collectively defining a discontinuous circumferential rib of reduced diameter, said conical body and the flange and discontinuous rib thereof being integrally formed of yieldable material, and the size and proportions of said conical portion being such as to accommodate

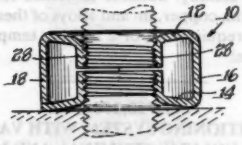
the protruding portion of an ampoule tip when said discontinuous rib has passed over the characteristic enlargement adjacent the ampoule and tip juncture. The discontinuous rib, by reason of its inward protrusion and location, provides a pressure point or fulcrum which facilitates clean severance of an ampoule tip. The rounded end of the conical body is preferably closed when the device is intended as a one use, throw-away, device and may suitably have a small axial opening to facilitate removal of a severed ampoule tip, when the device is intended for repeated usage.

3,720,251

SHEET METAL NUT

Henry A. Sygnator, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sept. 7, 1971, Ser. No. 178,196
Int. Cl. F16b *39/28*
U.S. Cl. 151—21 R **6 Claims**



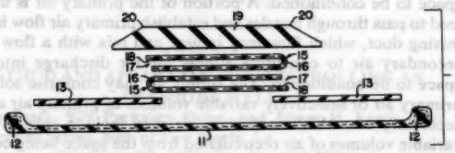
The present invention relates generally to improvements in sheet metal nut members and particularly to sheet metal nut members in which the opposite end faces thereof are adapted to accommodate a screw member. The nut member disclosed herein is of one-piece construction and is adapted to be stamped and formed from a single piece of sheet metal stock. Axially aligned and spaced end plate sections are separated by side plate sections which provide a plurality of adjacently positioned external wrench accommodating nut surfaces. Internally threaded aligned annular extrusions extend axially inwardly from each end plate section.

3,720,252

TIRE WITH FOLDED STABILIZER PLIES

Thomas Allen Batten, and Stephen Thomas Griebling, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 12, 1970, Ser. No. 79,835
Int. Cl. B61c *9/18*
U.S. Cl. 152—361 **9 Claims**



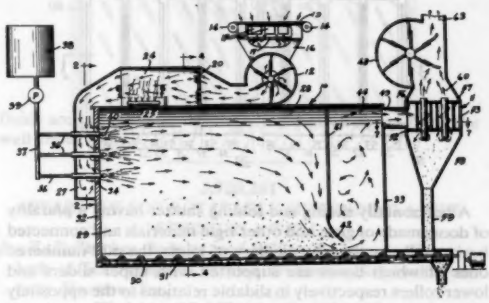
A vehicle tire and a method for building it, wherein a folded stabilizer structure having cords inclined to the rotational axis of the tire is located under the tire tread, such that, in the expanded tire, the cord angle in the stabilizer structure increases toward the folded margins.

3,720,253

EGG WHITE SPRAY DRYING APPARATUS AND METHOD

Max Ballas and Marvin R. Painter, Zanesville, Ohio, assignors to Ballas Egg Products Corporation, Zanesville, Ohio

Filed Apr. 2, 1971, Ser. No. 130,696
Int. Cl. B01d *1/24*
U.S. Cl. 159—4 F **7 Claims**



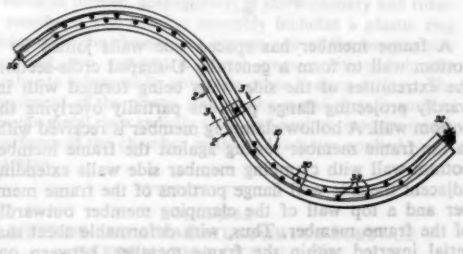
Apparatus for spray drying egg whites in a moving stream of air and recovering substantially all of the product from the air stream. The apparatus includes drying and separating chambers in communication with each other and in which a differential air pressure is employed to assist in drying the egg whites, as well as separating substantially all of the dried egg whites from the air stream.

3,720,254

DOOR CONTROL SYSTEM FOR FOLDING DOORS

Jay A. Smart, Salt Lake City, Utah, assignor to Won-Door Corporation, Salt Lake City, Utah

Filed Sept. 24, 1970, Ser. No. 75,144
Int. Cl. E05f *15/06*
U.S. Cl. 160—193 **4 Claims**



Folding door construction including a sinuous overhead track and means for moving a folding door therealong. The moving means includes a power driven pulley mounted cable laid out to define two elongated runs guided over a series of spools which maintain a generally centralized orientation of the cable throughout the oppositely directed track curvings. The lead post of the door is secured to one of the cable runs for movement thereby through a thin vertical cable clamp projecting upwardly from the lead post support assembly.

3,720,255

HORIZONTAL SHUTTER

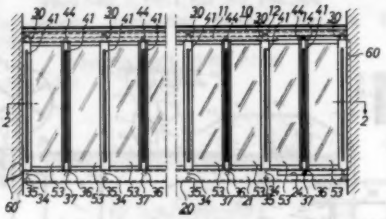
Eizaburo Ueda, 39-16, Komikawata Shimo-Kitamocho, Fukui, Japan

Filed June 14, 1971, Ser. No. 152,891

Claims priority, application Japan, Dec. 11, 1970, 45/110972

Int. Cl. E05d *15/26*

U.S. Cl. 160—199 3 Claims



A horizontally sliding and folding shutter having a plurality of doors made of glass and other rigid materials and connected horizontally by the intermediary of joints, the odd-numbered ones of which doors are supported with upper sliders and lower rollers respectively in slidable relations to the oppositely channel-shaped head jamb and sill, while the even-numbered ones of which doors are supported with upper and lower rollers respectively in slidable relations to the same head jamb and sill, and each door being rotatably fitted on the relevant joint so as to permit each adjacent doors to be folded flat against each other.

3,720,256

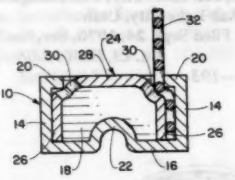
SCREEN FRAMING CONSTRUCTION

George E. Fralick, 1177 Avocada Crest, La Habra, Calif. 90631, and Roy A. Fralick, 15944 Lujon, Hacienda Heights, Calif. 91745

Filed Sept. 16, 1971, Ser. No. 180,968

Int. Cl. E06b *9/24*

U.S. Cl. 160—392 6 Claims



A frame member has spaced side walls joined by a bottom wall to form a generally U-shaped cross-section, the extremities of the side walls being formed with inwardly projecting flange portions partially overlying the bottom wall. A hollow clamping member is received within the frame member resting against the frame member bottom wall with clamping member side walls extending adjacent the side wall flange portions of the frame member and a top wall of the clamping member outwardly of the frame member. Thus, with deformable sheet material inserted within the frame member, between one of the frame member side walls and its corresponding clamping member side wall, and with downward deforming pressure applied to the clamping member top wall, the clamping member is transversely deformed forcing the clamping member side wall to clamp transversely against the frame member side walls and outwardly against the side wall flange portions of the clamping member correspondingly clamping the deformable sheet material therebetween. In one form of the clamping member, an inverted, U-shaped cross-section configuration cooperates with an upward protrusion of the frame member bottom wall to accomplish the clamping, and in another form the clamping member is annular in cross-section for accomplishing the clamping.

3,720,257

METHOD OF PRODUCING CARBON FIBER-REINFORCED METAL

Hans Beutler, Sulz; Emmanuel De Lamotte, Oberrohrdorf, and Anthony James Perry, Nussbaumen, all of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 18, 1970, Ser. No. 99,521

Claims priority, application Switzerland, Jan. 7, 1970, 96/70

Int. Cl. B22d *19/00*

U.S. Cl. 164—75 8 Claims

A method of producing carbon fiber-reinforced metal wherein the carbon fibers are first coated with nickel, the coated fibers are then combined with a melt of the metal heated in a crucible under a vacuum or protective gaseous atmosphere to exclude the possibility of oxidation and which is then allowed to solidify. Suitable materials for the metallic melt are aluminum, copper, tin and alloys of these metals all of which meet the requirement of a melting temperature lower than that of nickel.

3,720,258

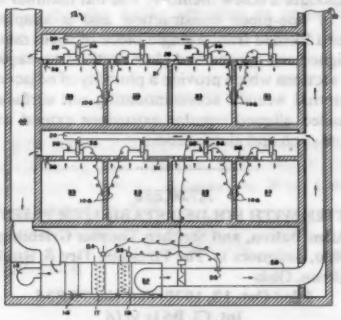
AIR CONDITIONING SYSTEM WITH VARIABLE PRIMARY AIR VOLUME TERMINAL AND METHOD OF OPERATION THEREFOR

Robert B. Chandler, South Pasadena, Calif., assignor to Kilpatrick & Company, Alhambra, Calif.

Filed July 14, 1970, Ser. No. 54,782

Int. Cl. F24f *3/00*

U.S. Cl. 165—2 9 Claims



An air conditioning system and method of operating an air conditioning system wherein conditioned primary air is transmitted to a plenum chamber in a terminal unit, which terminal unit may be positioned for example, directly within a space to be conditioned or supported above a suspended ceiling in a space to be conditioned. A portion of the primary air is utilized to pass through nozzles and establish primary air flow in a mixing duct, which flow may induce and mix with a flow of secondary air to constitute supply air for discharge into a space to be conditioned. The supply air may comprise solely primary air or selectively variable volumes of primary air and secondary air, which secondary air may include selectively variable volumes of air recirculated from the space being conditioned and, if appropriate, air from the plenum chamber formed by a suspended ceiling in the space to be conditioned.

Additionally, an air handling or terminal unit according to the invention may include a casing connected to a source of primary air for providing a constant flow of primary air and a selectively variable flow of primary air, means for selectively introducing and mixing a flow of secondary air with the constant flow of primary air, the secondary air comprising selec-

tively volumes of recirculated air from the space and, if appropriate, volumes of air drawn from the plenum chamber defined by a suspended ceiling in the space to be conditioned and a control means for controlling the thermal capacity of supply air for the space, the supply air including the primary air from the constant flow and, selectively, volumes of additional or by-pass primary air and secondary air.

3,720,259

TUBULAR HEAT EXCHANGER SUPPORTING AND SPACER STRUCTURE

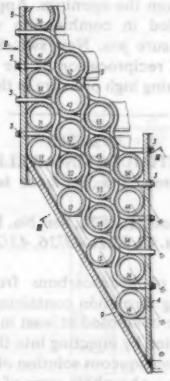
Kurt Fritz, Klosterneuburg; Josef M. Lippitsch, Graz, both of Austria, and Gunther Lurf, Stuttgart, Germany, assignors to Waagner-Biro Aktiengellschaft, Vienna, Austria

Filed Sept. 22, 1970, Ser. No. 74,356

Claims priority, application Austria, Sept. 26, 1969, A 9160/69

Int. Cl. F28f *9/00*

U.S. Cl. 165—162 **12 Claims**



Heat exchangers having spirally wound tubes for accommodating in their interior an inner heat-exchanging fluid while being engaged at their exterior by an outer heat-exchanging fluid. The spirally wound tubes are arranged one next to the other surrounding a given axis with the convolutions of one tube axially aligned with the convolutions of the next tube. The tubes form a group having an inner region directed toward the latter axis and an outer region directed away from the latter axis. At one of these regions there is a supporting structure while a spacer structure is fixed to the supporting structure and extends between the convolutions of the tubes to form with the latter a unitary assembly of tubes acting as a unitary structure in which the convolutions are maintained at given locations with respect to each other. The spacer structure serves to transmit to the supporting structure the weight of the tubes and the spacer structure as well as any thermal or mechanical stresses or reaction forces resulting from flow of the fluids during operation of the heat exchanger.

3,720,260

METHOD AND APPARATUS FOR CONTROLLING AN OFFSHORE WELL

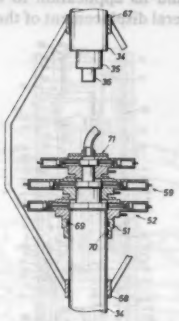
James Duck, 929 Parkview Drive, and James H. Lewis, 306 Caroline Street, both of New Iberia, La.

Filed Jan. 28, 1971, Ser. No. 110,525

Int. Cl. E21b *29/00, 33/06*

U.S. Cl. 166—.5 **38 Claims**

An improved system and method for bringing uncontrolled offshore wells under control is disclosed and includes subsurface bifurcated equipment for attachment to the pipe strings. The equipment includes a supporting frame which isolates a section of pipe from upper and lower sections. The isolated section of pipe and interior pipes are successively sealed off, cut away and sealed off to prevent any loss of fluid. Control



fluids are injected into the closed off pipe strings to bring the well under control.

3,720,261

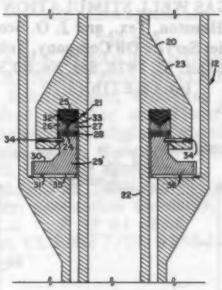
APPARATUS FOR ROTATABLY SUSPENDING A PIPE STRING IN A WELL

Joe K. Heilhecker, Bellaire, and William C. Maurer, Houston, both of Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Aug. 25, 1971, Ser. No. 174,833

Int. Cl. E21b *43/10*

U.S. Cl. 166—208 **17 Claims**



An apparatus for rotatably suspending a pipe string in a well includes a rotating member, a stationary member, and a bearing assembly. The bearing assembly is mounted in a chamber defined by the rotating and stationary members and is interposed between axially spaced and transversely extending bearing surfaces formed, respectively, in the stationary and rotating members. The bearing assembly includes a plastic ring positioned in the chamber to engage one of the bearing surfaces and two concentric metal rings positioned in the chamber to substantially cover the other bearing surface. The engagement of the plastic ring on the metal rings is such to force the metal rings radially apart and against opposite interior surfaces of the chamber as thrust loads are applied to the apparatus.

3,720,262

METHOD AND APPARATUS FOR SUB-SURFACE DEFORMATION OF WELL PIPE

Donovan B. Grable, 2515 San Francisco Ave., Long Beach, Calif.

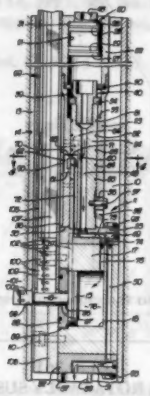
Filed Jan. 21, 1971, Ser. No. 108,322

Int. Cl. E21b *29/00, 43/11*

U.S. Cl. 166—298 **29 Claims**

Laterally directed deformation force is applied to structure at a selected location in a longitudinal bore hole, through use of a tool that comprises a pressure responsive actuator having a laterally displaceable plunger, and means to control fluid pressure application to the actuator. The tool is displaced

lengthwise of the bore hole to selected location by running of a pipe string carrying the tool, and fluid pressure is transmitted within the string and its application to the actuator is controlled to effect lateral displacement of the plunger toward the



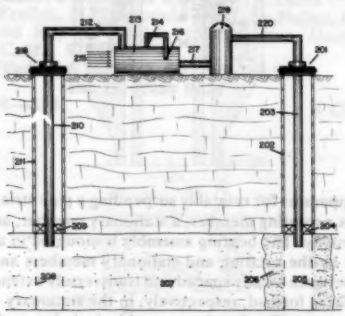
structure outwardly of the tool, with resultant deformation of the structure. Flow beans may be selectively placed in the structure, as for example punched through well casing, by operation of the tool; and other deformation operations may be performed at selected locations in a well.

3,720,263

GAS WELL STIMULATION

Bob G. Murphy, Houston, Tex., and J. O. Scott, Tulsa, Okla., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 13, 1970, Ser. No. 80,361
Int. Cl. E21b *43/20*
U.S. Cl. 166—303 **6 Claims**



The problem of reduction in productivity in gas wells due to connate water reducing gas permeability about the wellbore is overcome. Dry gas is injected into the production well in sufficient quantities to remove the majority of the water which restricts gas flow about the well. The dry gas is obtained from gas produced from a well completed in the formation at some distance from the well being dryed and stimulated. Gas produced is passed over a drying agent, compressed and injected into the production well so that the wellbore in the vicinity of the formation is rendered free of water with a high permeability to gas resulting.

3,720,264

HIGH PRESSURE JET WELL CLEANING

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed June 7, 1971, Ser. No. 150,536
Int. Cl. E21b *21/00*
U.S. Cl. 166—311 **11 Claims**

Method and apparatus for directionally applying high pressure jets to well liners to clean openings which are plugged with foreign matter. High velocity jets of liquid having a velocity in excess of 700 feet per second are jetted from jet orifices having a standoff distance between 5 and 10 diameters of the orifice from the openings to remove substantially all

plugging material from the openings. Apparatus for circulating foam is provided in combination with apparatus for delivering high pressure jets. New swivels and check valves permit rotation and reciprocation of the jet tool and tubing string while maintaining high pressure in the apparatus.

3,720,265

METHOD FOR STIMULATING WELL PRODUCTION

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 21, 1971, Ser. No. 155,312
Int. Cl. E21b *43/26, 43/27*
U.S. Cl. 166—307 **13 Claims**

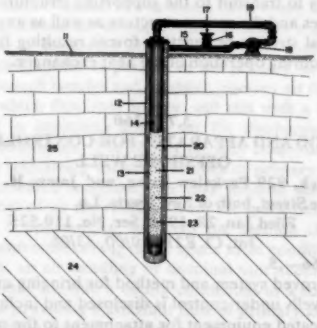
The production of hydrocarbons from a subterranean hydrocarbon-bearing formation containing acid-soluble components, such as one composed at least in part of dolomite or limestone, is stimulated by injecting into the formation a composition comprising an aqueous solution of a mineral acid having dissolved therein a phosphate ester of prescribed formula. The elimination of plugging of capillary openings within the formation and mineral scale deposition on production equipment due to post-precipitation of dissolved salts subsequent to acidization by means of the said phosphate ester results in a substantial improvement in hydrocarbon recovery.

3,720,266

METHOD OF DEEP WELL CEMENTING

Ottis G. Byrd, Jackson, Miss., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed April 7, 1971, Ser. No. 131,962
Int. Cl. E21b *37/00*
U.S. Cl. 166—312 **7 Claims**



A method utilizing a sequential injection of ever-decreasing weight drilling muds into wells for the total displacement of

high density drilling mud from the wellbore. Wellbore cementing is accomplished through the introduction of a wellbore cement having substantially the same weight as the drilling mud remaining within the wellbore after displacement of the high density drilling mud. The cement introduced easily displaces the drilling mud present in the well so that adequate contacting of the casing, cement and wellbore walls is achieved with no residual high density drilling mud remaining within the casing completion.

3,720,267

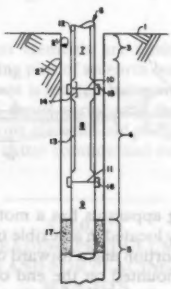
WELL PRODUCTION METHOD FOR PERMAFROST ZONES

William G. Allen; James A. Le Velle, and Frank J. Schuh, all of Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Division of Ser. No. 77,647, Oct. 2, 1970, Pat. No. 3,680,631. This application April 5, 1972, Ser. No. 241,131

Int. Cl. E21b *43/00*

U.S. Cl. 166—314 **4 Claims**



A method and apparatus for producing a warm fluid from a well through casing, the casing passing through a permafrost zone, wherein the permafrost is insulated from melting by the combined use of vacuum and solid thermal insulation.

3,720,268

FIRE RESISTANT STORAGE STRUCTURE

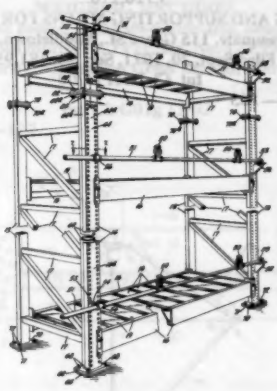
Edward A. Seiz, 136 East Third Street, Lansdale, Pa.

Continuation-in-part of Ser. No. 15,998, March 3, 1970, Pat. No. 3,626,487, which is a continuation-in-part of Ser. No. 728,182, May 10, 1968, Pat. No. 3,545,626. This application April 16, 1971, Ser. No. 134,618

Int. Cl. A62c *35/00*

U.S. Cl. 169—2 R **9 Claims**

A free-standing storage structure comprising uprights, beams releasably secured to the uprights by means of locking assemblies on the ends of the beams, and load-carrying members spanning between the beams, is provided with fire protection apparatus for the structure. The fire protection apparatus includes a wet upright having a conduit which contains a fire-retardant substance and which forms a structural component of the upright, the conduit being connected to pipes extending across the back of the structure for discharging the fire-retardant substance in response to a fire. Coupling means is provided to interconnect the conduits of aligned uprights when the structures are stacked vertically and to connect the uppermost end of the conduit to a source of fire-retardant substance. In order to promote dispersion of the fire-retardant substance, the load carrying members are fastened in spaced parallel relation to the beams by means of upstruck ears on the



beams which are deformed during assembly of the structure into interlocking engagement with flanges on the members.

3,720,269

PORTABLE TORQUE AND IMPULSE TRANSMITTING MACHINE

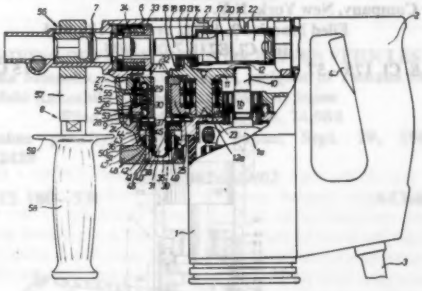
Karl Wanner, Echterdingen, Wolfgang Schmid, Plattenhardt, Manfred Bleicher and Horst Sigg, Stuttgart, Werner Lehmann, Leinfieden-Unteraichen, and Max Bürklin, Waldenbuch, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 21, 1970, Ser. No. 99,931

Claims priority, application Germany, Dec. 22, 1969, P 19 64 083.6

Int. Cl. E02d *7/02*; B25d *11/00*

U.S. Cl. 173—48 **13 Claims**



A portable torque and impulse transmitting machine wherein the power train between the output shaft of the electric motor and the tool in the tool holder contains a safety clutch in series with a disengageable coupling. The clutch is operative at all times so that the tool ceases to rotate when it encounters a predetermined resistance to rotation while the motor continues to operate the assembly which transmits to the tool axially oriented impulses to drive it into a rock or the like. The coupling is controlled by a switching member which is placed so close to an auxiliary handle that the hand which grips the auxiliary handle can reach the switching member

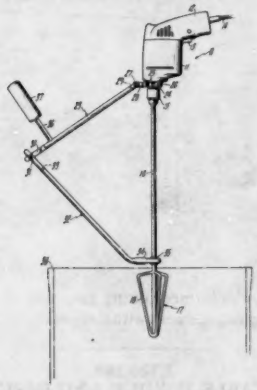
without appreciably relaxing the grip on the handle. The auxiliary handle can be coupled to the switching member in such a way that the hand which grips the handle can engage or disengage the coupling in response to rotation of the handle.

3,720,270

GUIDING AND SUPPORTING MEANS FOR A BEATER

Michael J. Pasquale, 115 Grove St., Middletown, Conn.

Filed Sept. 20, 1971, Ser. No. 181,951
Int. Cl. B01f *15/00*
U.S. Cl. 173—163 **8 Claims**



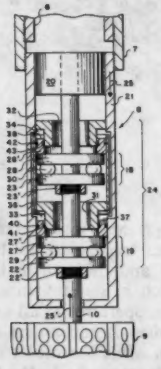
A beater of the type having a motor and beater element with an elongated shank rotatably driven by the motor, is provided with auxiliary or additional guiding and supporting means including a handle grip for manual manipulation of the tool which is supported on a linkage pivotally attached at one end to the motor housing and mounting a bearing for the shank of the beater element which is movable axially of the shank.

3,720,271

BEARING DEVICE AND METHOD FOR USING SAME

Loyd R. Kern, Irving, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed March 10, 1971, Ser. No. 122,904
Int. Cl. E21b *7/00, 3/08*
U.S. Cl. 175—57 **15 Claims**



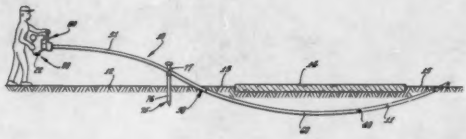
A self-adjusting bearing device employing multiple bearing means wherein each bearing means being in contact with a piston means which is in movable communication within a chamber. The chamber of each bearing means is in open communication with the chambers of other bearing means by way of conduit means so that movement of one piston means is reflected by movement of the other piston means in the other chambers by way of a liquid in the chambers and conduit means. A method for adjusting a plurality of bearing means so that each carries a predetermined proportion of the total load imposed on the bearing device by employing a movable piston with each bearing means and effecting communication from one movable piston to the rest of the movable pistons in the bearing device so that a movement of one piston is reflected in movement of the remaining pistons thereby distributing the total load among all the bearing means.

3,720,272

APPARATUS AND METHOD FOR DRILLING AN ARCUATE BORE FROM GROUND SURFACE UNDER AN OBSTRUCTION TO GROUND SURFACE

Edwin J. Hunter, Riverside, Calif., assignor to Toro Manufacturing Corporation, Riverside, Calif.

Filed June 7, 1971, Ser. No. 150,506
Int. Cl. E21b *7/08*
U.S. Cl. 175—61 **8 Claims**



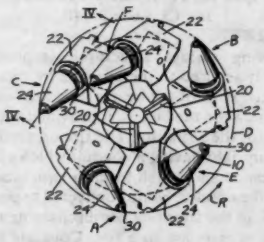
The earth boring apparatus has a motor driving a flexible drive shaft assembly located in a flexible tubular casing including a rear straight portion and a forward curved portion which guides a drill bit mounted on the end of the drive shaft assembly to, upon rotation of the drill bit, automatically drill an arcuate bore from the ground surface on an adjacent side of an obstruction, thereunder, to the ground surface on the opposite side of the obstruction while a water housing adapter around the rear end of the casing receives water from a hose for manually controlled intermittent feeding of the water down the casing to pass out the drill bit.

3,720,273

MINING TOOL

Robert J. McKenry, Windber, and Seibert S. Oaks, Everett, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 796,032, Feb. 3, 1969, abandoned. This application March 3, 1971, Ser. No. 120,406
Int. Cl. E21b *9/12*
U.S. Cl. 175—335 **22 Claims**



The invention concerns a mining tool having a body and having distributed about the body and projecting from the

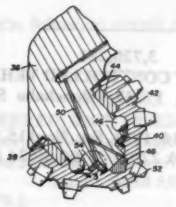
front side thereof a plurality of pick type bits, each rotatable in a respective bore. The tool preferably has a central pilot cutter disposed at least slightly in advance of the pick type bits. The tool may be made to various sizes by mounting rings on the body with the rings having pick type bits rotatably mounted thereon.

3,720,274

EARTH BORING BIT THRUST BEARING

Hugh F. McCallum, Hibbing, Minn., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 21, 1971, Ser. No. 145,651
Int. Cl. E21b 9/10
U.S. Cl. 175—372 **9 Claims**



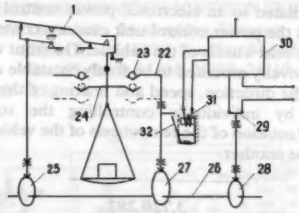
Intermediate thrust elements are positioned between the cutters and the bearing pins of an earth boring bit. Each intermediate thrust element is located between a thrust surface on a bearing pin and a thrust surface on the associated cutter. The intermediate thrust elements aid stabilization of the rotating cutter, promote cutter rotation and extend the lifetime of the bit.

3,720,275

DEVICE FOR READING PENDULUM-CAM SCALES BEAM POSITIONS AND FOR PLACING AND REMOVING WEIGHTS

Andrzej Chmielewski, ul. Msciwoja 6, Gdansk-Oliwa; Eligiusz Czerniak, ul. Mickiewicza 1/3m1, Gdansk-Wrzeszcz, and Tadeusz Kibort, ul. Piastowska 100d m69, Gdansk-Oliwa, all of Poland

Continuation-in-part of Ser. No. 784,356, Dec. 23, 1968, abandoned. This application Aug. 4, 1971, Ser. No. 168,884
Int. Cl. G01g 1/28, 23/36, 23/37
U.S. Cl. 177—3 **16 Claims**



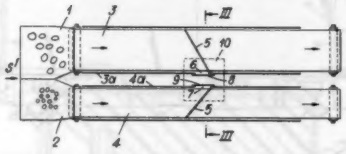
A pendulum scale has a scale beam carrying an optical microscale and a sample pan assembly including plural weight hangers. Weights are provided, and are carried by either the weight hangers or weight retaining elements. A light source illuminates the optical microscale, and portions of the light are received by photocells, the signals from which are representative of the scale beam position; these signals are supplied to a decoder which controls which weights are carried by the weight hangers and which weights are carried by the retaining elements. Preferably, a first lesser sensitive scale beam and a second greater sensitive scale beam are cumulatively engaged with the sample pan assembly. A digital read-out device is connected with the decoder to provide a read-out of the weight of a sample placed in the sample pan of the sample pan assembly.

3,720,276

WEIGHING MACHINES

Clayton Hatton Banks, Whitham-on-the-Hill, Bourne, England

Filed March 19, 1971, Ser. No. 125,953
Claims priority, application Great Britain, March 23, 1970, 13,977/70
Int. Cl. G01g 13/02
U.S. Cl. 177—122 **22 Claims**



Apparatus for weighing and delivering quantities of potatoes to a delivery point comprises two conveyor belts feeding potatoes to a plurality of weighing devices. One of the conveyors carries small potatoes and the other large potatoes, and openings are formed in the walls of the conveyors, the potatoes being fed through the openings into weighing pans of the weighing devices. Doors are provided over the openings so that the flow of potatoes to the pans may be controlled, and a sensor associated with each weighing device is operable to tip the pan of the weighing device when the weight of potatoes in the pan exceeds a predetermined final weight, the sensor also being operable to direct the tipped potatoes to a reject conveyor or a delivery conveyor depending on the final weight of the potatoes in the pan.

ERRATUM

For Class 177—81 see:
Patent No. 3,720,286

3,720,277

DRIVING DEVICE FOR MOTOR DRIVEN VEHICLES

Yutaka Masaoka, Hamakita, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Sept. 24, 1970, Ser. No. 74,984
Claims priority, application Japan, Sept. 29, 1969, 44/92428
Int. Cl. B62m 27/02
U.S. Cl. 180—5 R **6 Claims**

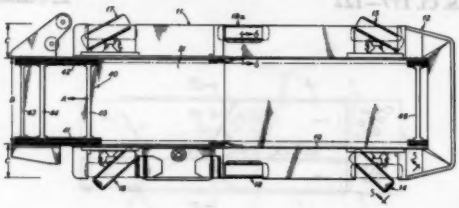
A driving device for motor driven vehicles having an endless track with meshing holes, front and rear sprocket wheels meshing with the endless track, either of said sprocket wheels driven by the engine of the vehicle to drive in turn the endless track, a plurality of suspension wheel means and closing means for shutting the meshing holes of the endless track, the

closing means held by the suspension wheel means, thereby, preventing snow from getting inside the endless track to render safe and smooth operation of the device.

3,720,278
MINE HAULAGE VEHICLE

William G. Bunchak, Chicago Ridge, and Reynold J. Krizek, Oak Forest, Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed June 18, 1970, Ser. No. 47,354
Int. Cl. B60r *7/00, 17/30*
U.S. Cl. 180—24 **5 Claims**

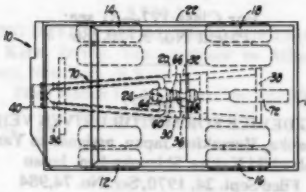


A self-powered mine haulage vehicle having a body which is articulated generally at its midpoint and having a pair of supporting wheels at each end of the body and intermediately located supporting wheels at the midpoint. The end supporting wheels are motorized wheel units with steering and braking means therefor.

3,720,279
COMBUSTION AIR INTAKE SYSTEM FOR AN OFF-THE-ROAD VEHICLE

Henry Edward Vincenty, Willoughby Hills, Ohio, assignor to Euclid, Inc., Cleveland, Ohio

Filed Feb. 17, 1971, Ser. No. 115,987
Int. Cl. B60k *13/02*
U.S. Cl. 180—54 A **11 Claims**



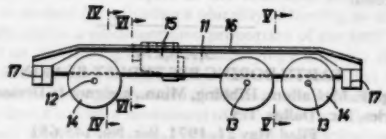
An off-the-road dump truck is disclosed having a gas turbine engine located remote from the forward end of the truck and combustion air delivery ducts extending to the engine from the front of the truck. Each duct is supported and protected by a truck frame member and each duct is connected to an engine inlet port via a flexible connection between the duct and the engine.

3,720,280
MULTI-AXLED VEHICLE CHASSIS

Peter Eller, Langenfeld, Germany, assignor to Leo Gottwald K.G., Dusseldorf, Germany

Filed July 15, 1970, Ser. No. 55,085
Claims priority, application Germany, July 19, 1969, P 19 36 919.8
Int. Cl. B62d *21/02*
U.S. Cl. 180—64 R **8 Claims**

A mobile crane chassis has a driving motor mounted between the front and rear axles substantially below the upper surface of the chassis. The chassis has a backbone consisting of spaced upright longitudinal webs interconnecting upper

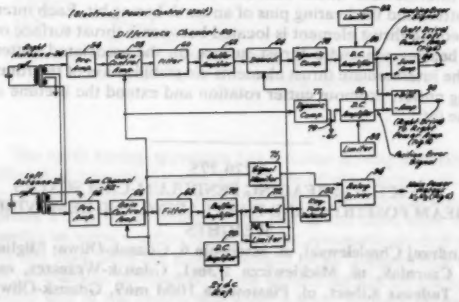


and lower plates, the motor being mounted between the longitudinal webs.

3,720,281
REMOTELY CONTROLLED VEHICLE

Jerald L. Frownfelter, 17237 Minnehaha Street, Granada Hills, Calif.

Filed Feb. 16, 1971, Ser. No. 115,176
Int. Cl. B60k *27/06, 31/00;* **B62d** *1/24*
U.S. Cl. 180—6.5 **10 Claims**



A three-wheeled remotely controlled vehicle is provided whose direction, speed and braking are automatically controlled by a remote transmitter. The signal from the transmitter is radiated to an electronic power control unit on the vehicle, and the power control unit causes a control to be exerted on the rear wheels of the vehicle. The front wheel of the vehicle is swivelly mounted to be freely rotatable about a vertical axis. The direction, speed and braking of the vehicle are controlled by individually controlling the rotation and direction of rotation of the rear wheels of the vehicle independently of one another.

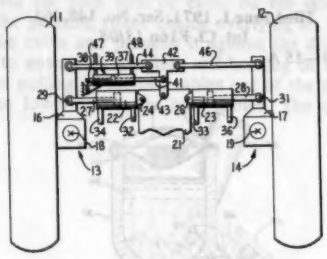
3,720,282
HYDRAULIC STEERING SYSTEM

Donald L. Bianchetta, Coal City; Richard L. M. Sears, Washington; Orcenith D. McWilliams, Morris, and James E. Scheidt, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 15, 1971, Ser. No. 180,750
Int. Cl. B62d *5/08*
U.S. Cl. 180—79.2 R **16 Claims**

An all-hydraulic steering system for wheeled vehicles incorporating a differential valve that maintains a predetermined, constant-pressure differential in the system so that the effort required by the operator to steer is a constant value. The

system also includes a hydraulic follow-up mechanism having means in association with the differential valve for automatically bleeding the follow-up circuit during operation of the vehicle.

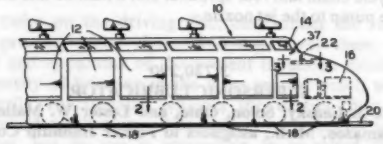


3,720,283

STEERED, HIGH SPEED VEHICLE

George D. Weaver, Weaver Road, Myrtle Creek, Oreg.

Filed June 22, 1971, Ser. No. 155,452
Int. Cl. B62d 5/04
U.S. Cl. 180—79.1 14 Claims



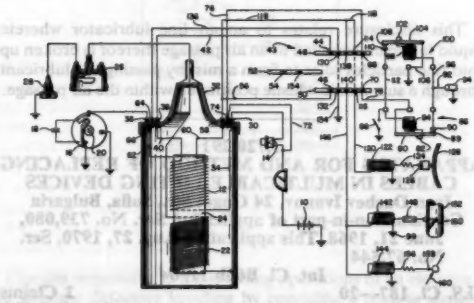
Pairs of wheels of an elongated vehicle are turned and held in turned positions by pairs of racks on cross bars driven by reversible electric motors which brake when de-energized. The electric motors are energized in directions and for durations corresponding to directions and angles of movement of castored follower rolls which are turned by movement of a disc moved from a centered position by a manually steered drive roll. The drive roll and the follower rolls may be lifted from the disc to permit the disc to return to its start position, and support rolls opposite to the drive roll are turned with the drive roll.

3,720,284

THEFT-PREVENTION IGNITION SYSTEM

Philip Myers, 18 de Julio, Moutevideo, Uruguay

Filed Oct. 26, 1970, Ser. No. 84,506
Int. Cl. B60r 25/04, 25/08, 25/10
U.S. Cl. 180—114 14 Claims



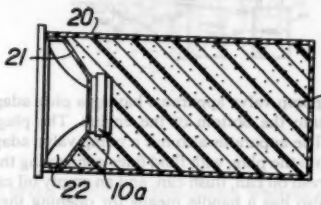
A theft-prevention ignition system having a plurality of normally open switches selectively located throughout a conventional ignition system and a plurality of normally closed switches located throughout the system whereby the vehicle is disabled. A multi-contact switch assembly contains the normally open and normally closed switches and includes a mobile electrically insulating plate which must be inserted into the switch assembly to permit operation of the vehicle.

3,720,285

LOUDSPEAKERS

Kenneth F. Russell, Shipley Baildon, and John D. Collinson, Otley, both of England, assignors to The Rand Organisation Limited, London, England

Division of Ser. No. 788,483, Jan. 2, 1969, abandoned.
This application June 30, 1970, Ser. No. 60,188
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 B 7 Claims



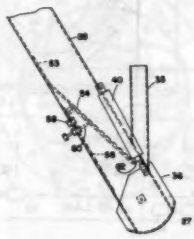
An electro-acoustic transducer such as a loudspeaker is housed in an enclosure having a filling comprising a rigid body of, for example, foamed polyurethane which is capable of transmitting pressure changes caused by operation of the transducer. The body may have an air-impermeable surface to form a sealed enclosure.

3,720,286

WEIGHING AND DELIVERY APPARATUS WITH INITIAL VOLUMETRIC DOSE AND DRIBBLE FEED

David P. Clark, Columbus, Ohio, assignor to The Exact Weight Scale Company, Inc., Columbus, Ohio

Filed March 2, 1972, Ser. No. 231,259
Int. Cl. G01g 13/04
U.S. Cl. 177—81 5 Claims



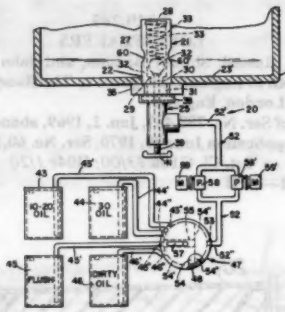
An apparatus for successive delivery of bulk material characterized by a novel feed chute construction which incorporates a fine feed flow control baffle associated with the rapid delivery of a bulk amount of material. The baffle plate is situated in the feed chute to define an initial bulk delivery volume which is delivered at a fast rate and which is followed immediately by a finer rate of flow as controlled by the restriction in the chute formed by the baffle plate and the inner wall of the chute.

3,720,287

CRANKCASE SERVICE

Marvin L. Martel, Fargo, N. Dak.

Filed April 1, 1970, Ser. No. 24,521
Int. Cl. F01m *11/04*
U.S. Cl. 184—1.5 **1 Claim**



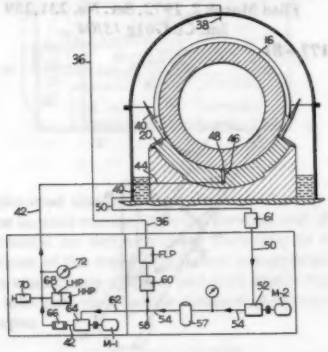
An engine pump valve apparatus having a plug adapted to be threaded into the bottom of the engine. The plug has a check valve. The apparatus also has a pump valve adapted to be threaded into the plug, with fluid lines connecting the drain valve with a fresh oil can, flush can, and an empty oil can. The pump valve also has a handle means for opening the check valve in the plug and pump means and selector valve means for selectively pumping out oil in the engine into the empty can, flushing the engine with flushing fluid from a flush can and pumping fresh oil into the engine from the fresh oil into the engine from the fresh oil can.

3,720,288

LUBRICATION SYSTEM FOR GRINDING MILL OR THE LIKE

Donald F. Tschabold, West Allis, Wis., assignor to Allis Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 9, 1971, Ser. No. 170,089
Int. Cl. F16n *29/02*
U.S. Cl. 184—6.4 **8 Claims**



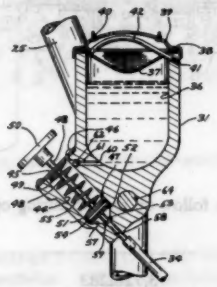
In combination with a grinding mill or the like having a trunnion supported by a stationary bearing structure to define a "free bearing" which permits axial contraction of the grinding mill during the cooling-off period after mill shutdown, a high pressure lubrication system including a high pressure pump for applying hydrostatic pressure to the "free bearing" during the mill cooling-off period whereby to "float" the trunnion in the stationary bearing structure, and timing means activated upon shutdown of the grinding mill to automatically provide "on-off" cycling of the high pressure lubricating pump.

3,720,289

MOTORCYCLE CHAIN OILER

Charles L. Moldenhauer, 6A Saratoga Lane North, Plymouth, Minn.

Filed June 1, 1971, Ser. No. 148,461
Int. Cl. F16n *13/08*
U.S. Cl. 184—15 A **4 Claims**



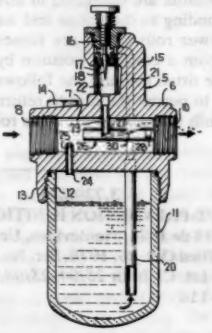
A chain oiler for motorcycles having a reservoir and pump independent of the motorcycle engine adapted to be mounted on the cycle frame in a position conveniently accessible to the rider. A jet nozzle also adapted to be mounted on the frame and directed at the point of meeting of the lower run of the rear cycle chain and rear sprocket and a flexible line connecting the pump to the jet nozzle.

3,720,290

SUPERSONIC LUBRICATOR

Zdenek J. Lansky, Solon, Ohio, and Lester W. Malinowski, Kalamazoo, Mich., assignors to Parker Hannifin Corporation, Cleveland, Ohio

Filed Jan. 5, 1971, Ser. No. 104,010
Int. Cl. F16n *7/34*
U.S. Cl. 184—55 A **17 Claims**



This disclosure relates to an air line lubricator wherein liquid lubricant supplied to an air passage thereof is broken up into fine particles so as to form a mist by passing the lubricant through a supersonic whistle positioned within the air passage.

3,720,291

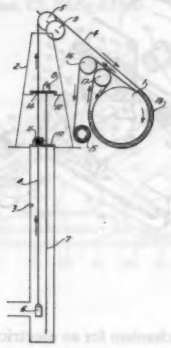
APPARATUS FOR AND METHOD OF REPLACING CABLES IN MULTICABLE LIFTING DEVICES

Ivan Dachev Ivanov, 24 Gogol Str., Sofia, Bulgaria

Continuation-in-part of application Ser. No. 739,080, June 21, 1968. This application Aug. 27, 1970, Ser. No. 67,544
Int. Cl. B66b *11/04*
U.S. Cl. 187—20 **2 Claims**

Apparatus for and method of replacing cables in multicable lifting devices, such devices having a lifting ma-

chine with a single driving disc. When a cable is to be replaced in the lifting device, a number of pressing roller chains are mounted on the machine, there being one roller chain for each turn of cable on the driving disc, each of the pressing roller chains overlying its respective turn of the cable and pressing it against the driving disc, whereby to ensure an absolute self-holding of the cables during the pulling of the old cables out of the pit and/or during the lowering of the new cables. The cables are



wound twice on the driving disc, once under the rollers of the pressing roller chains and once over them. The method and apparatus of the present invention eliminate the necessity of bringing in the large special winch which temporarily functionally replaces the driving disc and its attendant mechanisms. Not only is such special winch expensive, but its use is impossible in so-called "blind shafts," the upper ends of which do not extend upwardly to ground level so as to permit the installation of the special winch at the head of the shaft.

3,720,292

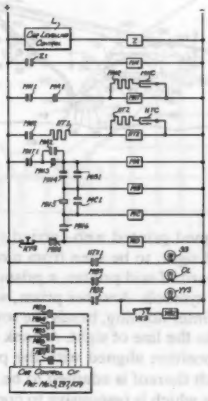
AUTOMATIC ELEVATOR CAR POSITIONING MONITOR

John E. Magee, 191 Forest Boulevard, Greenburgh, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,039

Int. Cl. B66b *5/02*

U.S. Cl. 187—29 R **13 Claims**



Circuits responsive to the levelling operations of an elevator car indicate defective levelling by operating a remote signal and may be used to provide express movement of the car which levels improperly to a predetermined landing.

3,720,293

DISC BRAKE ANTI SQUEAL MEANS

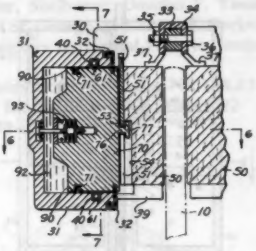
Ryotaro Hikida, and Takeo Ogasawara, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Showa-ku, Nagoya-shi, Aichi-ken, Japan

Filed Aug. 21, 1970, Ser. No. 66,007

Claims priority, application Japan, Sept. 1, 1969, 44/69271

Int. Cl. F16d *65/00*

U.S. Cl. 188—73.5 **12 Claims**



A disc brake of simple construction wherein a supporting member of elastic material is disposed between the cylinder and piston in such manner as to allow the piston to move axially along the cylinder and to vibrate synchronously with the cylinder in the radial direction of the piston, thereby to prevent coupled vibration of the piston and the brake friction pad and to eliminate brake squeal.

3,720,294

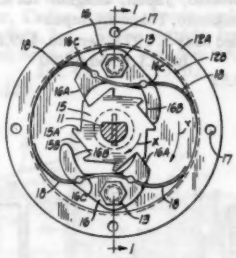
PAWL AND RATCHET MECHANISM

Gunter F. Plamper, Lakewood, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed July 7, 1971, Ser. No. 160,370

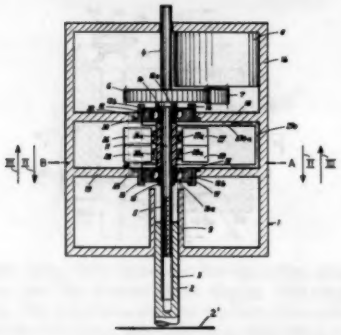
Int. Cl. F16d *41/12*

U.S. Cl. 192—46 **8 Claims**



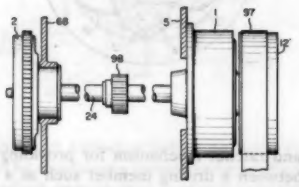
A pawl and ratchet mechanism for providing driving engagement between a driving member such as a tractor axle and a driven member such as a tractor wheel, wherein there is driving engagement upon rotation of the driving member in one circumferential direction and driving dis-engagement upon rotation of the driving member in an opposite circumferential direction. This is an abstract only of the specific illustration of the invention given by way of example, and is not to be used in the interpretation of the claims nor as a limitation on the scope of the invention.

3,720,295
POWER POSITIONING APPARATUS WITH FORCE DEPENDENT SHUT-OFF
Jurgen Balz, Heilbronn, Germany, assignor to Firma Helmut Balz G.m.b.H., Heilbronn (Neckar), Germany
Filed Nov. 19, 1971, Ser. No. 200,549
Claims priority, application Germany, May 19, 1971, P 21 24 841.9
Int. Cl. F16d 71/00
U.S. Cl. 192—141 6 Claims



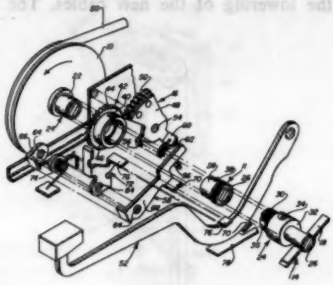
A housing defines therein a chamber through which a motor driven spindle passes which, when an element connected thereto strikes an abutment with predetermined force, causes the motor to shut off. The spindle is held in the housing in axially movable ball bearings which are spread apart by a spring. A sleeve surrounds the spindle, the sleeve having at least one cam thereon. If the spindle is subject to excursion, an axially moving ball bearing (against the force of the spring) will frictionally engage the sleeve, causing its rotation, and the cam to engage a shut off switch.

3,720,296
INCHING AND TWO SPEED PLANETARY GEAR DRIVES FOR PRESSES
Eiji Ohno, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan
Filed May 3, 1971, Ser. No. 139,609
Int. Cl. F16d 67/00
U.S. Cl. 192—3.52 3 Claims



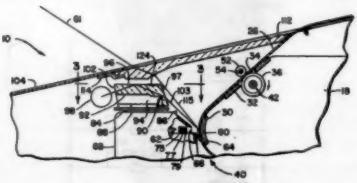
In a driving system of mechanical presses, a driving device for presses comprising a clutch section and a brake section for affording to rotate the driving shaft at a high speed or at low speed or for stopping the driving shaft.

3,720,297
ACTION AND SHIFT JAM RESET MECHANISM
Thomas E. Frechette, Windsor Locks, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed April 21, 1971, Ser. No. 136,036
Int. Cl. B41j 23/08
U.S. Cl. 197—17 4 Claims



A jam reset mechanism for an electric typewriter disengages a wrap spring clutch to uncouple a power source from a power roll when type bars or other driven mechanisms jam. The jam reset mechanism also imparts a rotational movement to the power roll in a direction counter to its normal direction of rotation to allow the drive pawls of the jammed type bars or other driven mechanisms to return to their inactive positions.

3,720,298
PRISM ALIGNMENT MEANS FOR A CHARACTER AT A TIME PRINTER
Kay Alonas, Skokie; Valentine R. Engelman, Niles, and Norman A. Jacobs, Arlington Heights, all of Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed Nov. 16, 1970, Ser. No. 89,788
Int. Cl. B41j 29/18
U.S. Cl. 197—182 2 Claims



To enable aligned printed web-carried symbols, which are out of the line of sight, to be seen from a regular position adjacent the keyboard of said printer, a prism bends source light to illuminate the symbols. Another prism, which is mounted in a cover of the printer housing, bends the source light reflected from the web into the line of sight. A bank of aligned lamps is supported in a position aligned with the printing stations on the web, and each thereof is adapted to be illuminated in succession by means which is responsive to completion of the formation of a symbol. A double image of each lamp can be seen through one of the prisms. Parallax of the lamp is prevented by aligning a selected double image with a pair of station designating marks on a pair of parallel scales carried adjacent the web and on said first named prism.

3,720,299

MACHINE FOR REMOVING SEDIMENTARY MATERIAL FROM FILTER BEDS

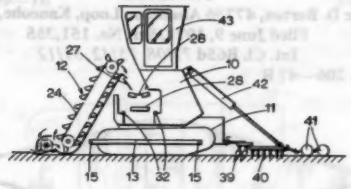
Horst Wegmann, Essen; Karl Ulrich Smula, Vinnum; Lothar Bartz, Bochum-Gerthe, and Wilhelm Stoltefuss, Heeren-Werve, all of Germany, assignors to Gewerkschaft Eisenhutte, Westfalia, Germany

Filed April 23, 1971, Ser. No. 136,818

Claims priority, application Germany, Aug. 22, 1970, P 20 41 803.5

Int. Cl. B65g *65/06*

U.S. Cl. 198—9 13 Claims



A machine for removing sedimentary material from filter beds of water supply installations. The machine has a chassis running on endless tracks and supporting a displaceable front frame carrying an inclined elevated conveyor arrangement with a plurality of circulated buckets. A rotatable drum with projecting paddles or bars serves to project material in a trough which feeds the buckets of the inclined conveyor arrangement. An inclined plate also carried by the frame serves to skim a layer of material from the bed as the machine advances and the drum picks up the material from the plate. A further conveyor extends transversally of the chassis and receives material from the inclined conveyor for subsequent discharge from the machine.

3,720,300

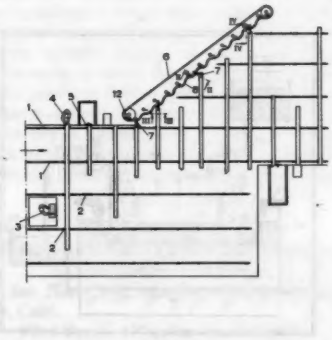
TIMBER CONVEYOR

Alpo Rysti, Frisansintie 22, Frisans, Finland

Filed Dec. 15, 1970, Ser. No. 98,322

Int. Cl. B65g *47/64*

U.S. Cl. 198—20 R 2 Claims



Timber conveyor, comprising a conveyor which moves the timber forward in a transverse position and in its continuation an oblique conveyor, on which the timber has both a velocity component in the original transporting direction and a velocity component parallel to the longitudinal direction of each piece of timber. The invention is particularly characterized in that the oblique conveyor has been provided with elements acting upon the ends of the pieces of timber, which elements in the oblique conveyor travel along a curved path so that at the moment when the piece of timber is released the piece of timber has a non-existent or at least nearly non-existent velocity component in its longitudinal direction.

3,720,301

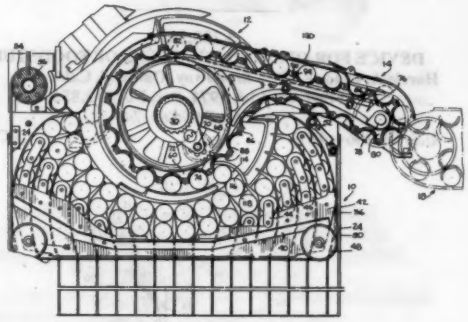
AMMUNITION HANDLING SYSTEM

Newton C. Garland; James D. Scanlon, both of Burlington; Otto H. Meier, Shelburne; Douglas P. Tassie; Burton P. Clark, both of St. George, and Lester F. Backus, Charolotte, all of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Oct. 13, 1971, Ser. No. 188,831

Int. Cl. B65g *47/26*; F41c *9/22*

U.S. Cl. 198—32 21 Claims



A cartridge storage and feed system is provided including a magazine having a plurality of channels in a planar array, each channel for storing a column of cartridges, and an annular scoop for withdrawing the leading cartridge from each of said channels seriatim for providing a train of cartridges.

3,720,302

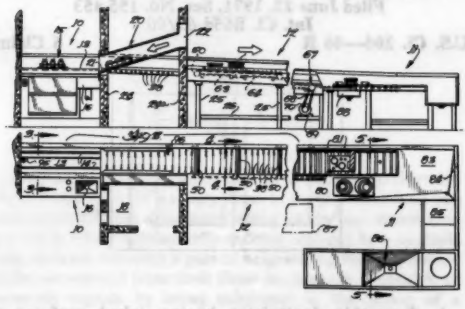
CONVEYOR SYSTEM FOR TRAYS

Cyril L. Kegler, Cedar Rapids, Iowa, assignor to Bishop Buffets, Inc., Cedar Rapids, Iowa

Filed Sept. 4, 1970, Ser. No. 69,819

Int. Cl. B65g *13/02*

U.S. Cl. 198—127 7 Claims



A conveyor system for use, for example, in transporting trays containing variable loads of dishware, silverware, glasses, etc., in a food service establishment, includes a

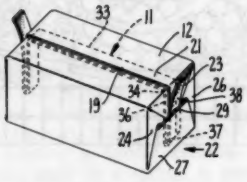
plurality of freely rotatable support rollers spaced along the conveyor track at a predetermined pitch for supporting the trays as they move under force of gravity. A series of powered rollers rotating at constant speed and provided with a surface of low friction material are also spaced along the conveyor track at the same pitch as the support rollers but at a greater interval. Adjacent ones of the powered rollers are preferably spaced at a little less than about twice the length of a tray. With this arrangement, loaded trays may accumulate along the conveyor track with the powered rollers slipping against the bottom surfaces of the trays when blocked by the accumulating trays ahead. Yet when trays are removed from the discharge end, the remaining trays are urged forward by the powered rollers. The powered rollers also regulate the speed of the traveling trays, for example, in arresting the speed of a heavily loaded tray and increasing the speed of a lightly loaded tray. A water-tight pan forms a trough beneath the track, and the support rollers are easily removed for cleaning and sanitizing the conveyor pan.

3,720,303

DEVICE FOR OPENING WRAPPERS OF FOODSTUFFS

Harrie A. Glaque, 5826 Broadway, Oakland, Calif.

Filed April 14, 1971, Ser. No. 133,855
Int. Cl. B65d *85/74*
U.S. Cl. 206—46 F **3 Claims**



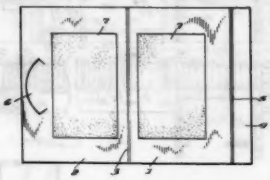
In a folded wrapper, an elongated strip is positioned beneath the overlapping side seam and end flaps of the wrapper and extends exterior of the end flaps thereof. Pulling outwardly on the exposed ends of the strip unfolds the end flaps and lifting of the strip opens the side seam of the wrapper to expose the contents for use. For storage, the strip is repositioned and the wrapper refolded in position for the next opening.

3,720,304

DISPOSABLE FOOTPRINTER

Lorene Laugherty and James R. Laugherty, Knoxville, Tenn., assignors to Avis Research, Inc., Knoxville, Tenn.

Filed June 22, 1971, Ser. No. 155,453
Int. Cl. B65d *85/00*
U.S. Cl. 206—46 R **6 Claims**



A disposable footprinter having inked surfaces to receive portions of the feet of an infant to enable prints or impressions thereof to be transferred onto a suitable receptive medium such as paper. The device is formed of a sheet of folded paperboard having opposite sides which may have inked surfaces applied to one or both of the inner surface thereof. The sides are folded one over the other with means at an edge of one of the sides to confine the two in folded relation. The sides are so proportioned that one of them will be bowed with respect to the other so as to hold the inked surface spaced from each other and against rubbing engagement with the inner surfaces of the folded sheet, thus maintaining the medium in condition for proper impression and transfer of the marking onto the receptive surface.

3,720,305

VEHICLE WINDSHIELD LIQUID CONCENTRATE PACKAGE

Frederic D. Barton, 47736 Ahumanu Loop, Kaneohe, Hawaii

Filed June 9, 1971, Ser. No. 151,355
Int. Cl. B65d *77/08, 75/42, 31/12*
U.S. Cl. 206—47 R **1 Claim**

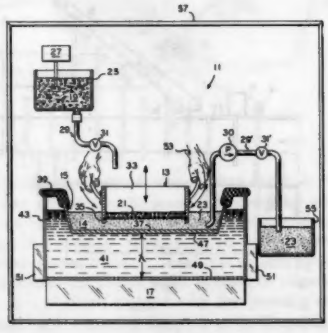
A vehicle windshield liquid concentrate package is disclosed comprising double containers of flexible sheet material separately containing, respectively, an anti-freeze concentrate in liquid form and an aqueous windshield washer concentrate in liquid form, and means joining said containers together during storage and shipment which can be torn apart at the time of use to separate the two containers to facilitate opening them so that the point of use the two concentrates may be freshly admixed and added to the vehicle windshield cleaner container, said containers two isosceles triangular sided tetrahedrons joined along one pair of corresponding unequal length sides.

3,720,306

MEANS AND PROCESS FOR ACHIEVING A CONTROLLED PARTICLE SIZE RANGE OF CATHODE RAY TUBE PHOSPHORS

Robert A. Hedler, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,572
Int. Cl. B07b *1/28*
U.S. Cl. 209—1 **8 Claims**



An efficient means and process for achieving a cathodoluminescent phosphor suspension of predeterminately controlled particle size for use in a cathode ray tube screening formulation to realize a high resolution type screen. A portion of a first liquid suspension formed of incoming phosphor materi-

al is transferred to sieve means oriented in a shallow quantity of collector liquid agitated by ultrasonic energy. The sieve is discreetly moved in the agitated collector liquid to effect a gentle pumping action to expedite an exchange of liquid and particles therethrough and form a second suspension of sieve-sized phosphor particles which is adjusted for use in the screening operation.

3,720,307

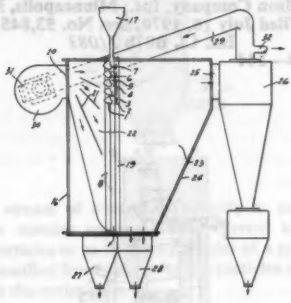
PNEUMATIC CLASSIFIER WITH GRATING

Risto Hukki, Otaniemi, Finland, assignor to Kennedy Nan Saum Corporation, Danville, Pa.

Filed April 29, 1970, Ser. No. 33,010

Int. Cl. B07b *9/02*

U.S. Cl. 209—10 **3 Claims**



An improved apparatus for pneumatic classification of finely divided solids, including primary separation of the material by directing a curtain of finely ground falling solids in a zig-zag course through a gas stream of relatively high velocity and a second separation step of the finer fractions by similar treatment in a lower velocity gas stream.

3,720,308

HEAVY LIQUID SEPARATION OF BRUCITE FROM ASSOCIATED MINERALS OF BRUCITIC ORES

Tage L. B. Jepsen, Gabbs, Nev., assignor to Basic Incorporated, Cleveland, Ohio

Filed April 20, 1970, Ser. No. 30,266

Int. Cl. B03b *1/02*; B03d *1/00*

U.S. Cl. 209—11 **4 Claims**

Brucite in finely divided condition is collected as a high grade concentrate of brucitic ores and other magnesium hydroxides by selective temperature control of heavy liquid media during continuous treatment. Ore is initially assayed to determine the specific gravity of its brucite content and methylene bromide as heavy liquid media will be used at its usual specific gravity of 2.48 at ambient temperature. If higher grade product is desired, changes in temperature of media are developed to obtain density drop to 2.40, for example. To change back to normal production media temperature is adjusted and no change in media composition is required.

3,720,309

METHOD AND APPARATUS FOR SORTING SEMICONDUCTOR DICE

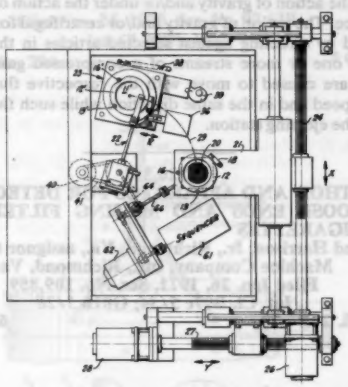
Basil Weir, San Jose, Calif., assignor to Teledyne, Inc., Mountain View, Calif.

Filed Dec. 7, 1971, Ser. No. 205,502

Int. Cl. B07c *5/344*

U.S. Cl. 209—73 **6 Claims**

A method and apparatus therefor for sorting semiconductor dice from a monolithic wafer where after being data logged the wafer is placed on sticky tape located on an X,Y indexing table and a vacuum probe picks a single selected die from the wafer to a receiving table also having sticky tape. The receiving table is rotatable and also indexed along a radial line to allow matched pairs of semiconductor dice to be formed in adjacent concentric circles. A vacuum technique prevents damage to the individual dice while being picked. In addition, dice coordinate changes due to fracturing are compensated for.



3,720,310

APPARATUS FOR SEPARATING SELECTED CIGARETTES OR ANALOGOUS ROD-SHAPED ARTICLES FROM A SERIES OF RAPIDLY MOVING EQUIDISTANT ARTICLES

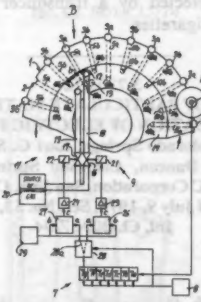
Frank-Dieter Lehmann, Wentorf, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamberg, Germany

Filed March 2, 1971, Ser. No. 120,293

Claims priority, application Germany, March 5, 1970, P 20 10 392.8

Int. Cl. B07c *3/04*

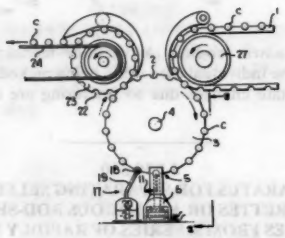
U.S. Cl. 209—74 **37 Claims**



Cigarettes or like rod-shaped articles are conveyed sideways in equidistant flutes of a rotary drum at a speed of at least one thousand articles per minute and along an ejecting station having a width which substantially exceeds and can be a multiple of the distance between a pair of neighboring flutes. Selected articles are ejected from their flutes in response to electric or pneumatic signals by being subjected to the action of a mechanical force and/or to the action of a force produced by a stream of gaseous fluid whereby the point of application of the force moves with the flute which contains the respective selected article while such flute travels through the ejecting

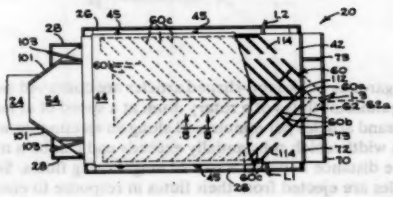
station. The articles can be held in their flutes by suction or by mechanical means, and the suction or the mechanical retaining action is terminated when a selected article reaches the ejecting station so that the selected articles are separated under the action of gravity and/or under the action of centrifugal force. The action of gravity and/or centrifugal force can be assisted by directing against selected articles in the ejecting station one or more streams of a compressed gaseous fluid which are caused to move with the respective flutes at the same speed and in the same direction while such flutes travel along the ejecting station.

3,720,311
METHOD AND APPARATUS FOR DETECTING LOOSE ENDS AND MISSING FILTERS IN CIGARETTES
Edmund Harrison, Jr., Richmond, Va., assignor to Molins Machine Company, Inc., Richmond, Va.
Filed Jan. 26, 1971, Ser. No. 109,859
Int. Cl. B07c 5/34; G01b 5/28
U.S. Cl. 209—79 **61 Claims**



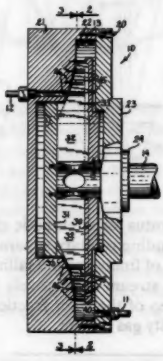
A method and apparatus for detecting irregular surfaces of articles and particularly loose ends and missing filters in cigarettes provides for the impingement of an air stream against at least one end of each cigarette. If the tobacco filler at the end of the cigarette is loose or pitted or if the filter plug is missing resulting in a cavity at the end of the cigarette, an air turbulence is created by the air stream resulting in a distinctive sound which can be detected by a transducer and utilized to reject defective cigarettes.

3,720,312
SEPARATION OF PARTICULATE MATERIAL BY THE APPLICATION OF ELECTRIC FIELDS
Paul R. Shook, Colorado Springs; Earl G. Sweeney, Boulder, and Ralph E. Duncan, Colorado Springs, all of Colo., assignors to FMC Corporation, San Jose, Calif.
Filed July 9, 1970, Ser. No. 53,518
Int. Cl. B03c 7/04
U.S. Cl. 209—130 **28 Claims**



A separator of particulate material by the use of electric fields is comprised of a pair of spaced plates of a dielectric material between which particulate material is arranged to be fed, the material being propelled in a given direction by a vibratory feeder attached to the lowermost plate. A set of parallel spaced electrodes are provided on each of said plates out of contact with the material and extending in a direction laterally of said given direction, and an AC voltage is applied between the sets of electrodes so that alternating electrical fields are set up at spaced locations along said plates in said given direction. Certain of said particulate material is caused to be repelled by said electrical fields and deflected thereby to move in said direction laterally of said given direction while the remainder of said material moves generally in said given direction.

3,720,313
CENTRIFUGAL CLASSIFIER
Charles E. Lapple, Los Altos Hills, Calif., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Filed July 10, 1970, Ser. No. 53,845
Int. Cl. B07b 7/083
U.S. Cl. 209—144 **20 Claims**

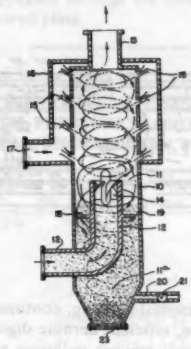


A housing having a cylindrical cavity therein with a rotor coaxially mounted for rotation relative thereto and passageways for providing a flow of air from the outer circumference to the axis of the rotor. A plurality of radially oriented longitudinally extending fins affixed to the rotor for producing a forced vortex in the flow of air and a plurality of radially spaced slots in each of the fins coinciding with longitudinally extending rods affixed to the housing for producing shear forces tending to disperse solids carried by the air into discrete particles which can be separated into coarse and fine fractions by centrifugal force within the vortex.

3,720,314
CLASSIFIER FOR FINE SOLIDS
Hohn F. Phillippi, Cleveland, Ohio, assignor to Aerodyne Development Corporation, Cleveland, Ohio
Filed Nov. 9, 1970, Ser. No. 87,993
Int. Cl. B04c 3/00
U.S. Cl. 209—144 **9 Claims**

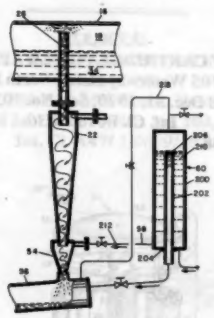
A modification of apparatus for separating fine particles from a gaseous fluid secondary provide means for classifying the fine particles is presented. The apparatus for separating particles from fluid is like that disclosed and claimed in U.S. Pat. No. 3,199,268 granted Aug. 10, 1965 to Karl-Heinz Oehlrich et al. This prior invention involves a primary flow of particles entrained in a fluid medium generally axially of a cylindrical processing chamber from an inlet duct near one end to an outlet duct at the other axis. A solid ground closes a portion of the chamber near the inlet duct save for an annular open

space next to the wall of the chamber. A wecondary circulatory flow is imparted to the fluid medium above the solid ground which causes the solid particles to be separated from the medium and to fall through the annular space into a collecting hopper. The modification provides a fluid inlet to the hopper



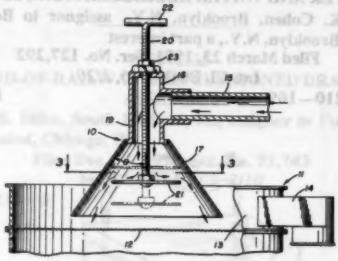
to cause a stream of controlled velocity to pass upwardly through the annular space counter current to the falling stream of particles so as to drive particles of a predetermined size to be classified from the rest of the particles and to be carried through the outlet duct.

3,820,315
STABILIZING PAPERMAKING SYSTEM CLEANER OPERATION
Robert George Kaiser, Hohokus, N.J., assignor to Clark & Vicario Corporation, North Tarrytown, N.Y.
Filed Jan. 18, 1971, Ser. No. 107,157
Int. Cl. B04c *5/18*
U.S. Cl. 209—211 **18 Claims**



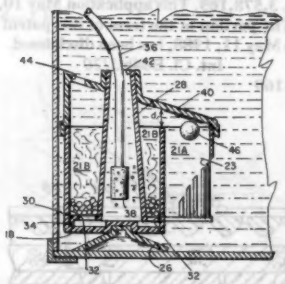
Cleaning efficiency in papermaking system cleaners is enhanced by fitting elutriation units on the rejects ends of system cleaners to further dilute cleaner rejects portions and thereby recover more useable fiber in the accepts portion, the dilution being effected by means of a stream of elutriation water admitted to the elutriation unit at relatively low but constant pressure, the accepts and rejects portions from such cleaners being discharged freely into spaces of zones of vacuum of substantially the same condition of vacuum provided by an unobstructed liquid-free core interconnecting such spaces.

3,720,316
FLOW CONTROLLER FOR A MATERIAL SEPARATOR
Laverne J. Riesbeck, and Willis A. Blackwell, both of Canton, Ohio, assignors to Midwestern Industries, Inc., Massillon, Ohio
Filed Nov. 25, 1970, Ser. No. 92,610
Int. Cl. B07b *1/00*
U.S. Cl. 209—254 **5 Claims**



A device for controlling the flow of a fluid material as it is presented to a screen of a conventional material separator to isolate any solids carried therein consists generally of an adjustable baffle plate within a conical hood member. The input fluid is directed against the baffle plate and is thereby deflected against the hook member which is suspended over the screen. The fluid then follows along the hood member and falls to the screen, being presented thereto as an annular sheet of fluid material. The precise configuration of the sheet of fluid material is controlled by adjusting the axial location of the baffle plate, moving it toward and away from the direction of the flow of the input material. The solids which are unable to pass through the screen are transmitted to a discharge chute located at the periphery of the screen.

3,720,317
AQUARIUM FILTER
Allan H. Willinger, New Rochelle, N.J., assignor to Metaframe Corporation, Maywood, N.J.
Continuation-in-part of Ser. No. 832,172, June 11, 1969, Pat. No. 3,630,367. This application May 3, 1971, Ser. No. 139,666
Int. Cl. B01d *35/14*
U.S. Cl. 210—94 **11 Claims**



A filtering device comprising a housing in which is provided a partition for separating the housing into first and second chambers in communicating relation. The housing is provided with at least one opening through which water may enter into the first chamber from an external water-carrying source. The second chamber includes a filtering assembly for cleansing water which has entered the first chamber and which thereafter flows into the second chamber. An air conduit is provided for directing air into the second chamber for urging

water through the filtering assembly. Likewise, a conduit is provided for directing both air and cleansed water out of the second chamber after the water has been cleansed by the filtering assembly. An indicator is provided for signalling inflow of water into the first chamber and outflow from the latter into the second chamber.

3,720,318

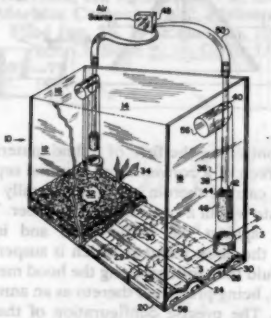
FILTER AND WATER RECIRCULATION SYSTEM

Harvey K. Cohen, Brooklyn, N.Y., assignor to Bernice G. Conn, Brooklyn, N.Y., a part interest

Filed March 23, 1971, Ser. No. 127,292

Int. Cl. E04h *3/16, 3/20*

U.S. Cl. 210—169 **16 Claims**



An aquarium filter water recirculation system comprises a water-carrying and an inner air-carrying member attached to a base member which is supported above the floor of an aquarium. Air is passed through the inner cylindrical tube, diffused, and mixed with the water in the water-carrying member. The base member is made of polyvinyl chloride and is provided with a corrugated regular contour above which rests the gravel bed of the aquarium.

3,720,319

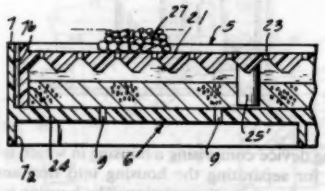
REVERSE FLOW AQUARIUM FILTER DEVICE

Eugene B. White, Oak Park, Ill., assignor to Filters International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 67,648, July 31, 1970, abandoned, which is a division of Ser. No. 805,274, March 7, 1969, Pat. No. 3,578,169. This application May 10, 1971, Ser. No. 141,680. The portion of the term of this patent subsequent to May 11, 1988, has been disclaimed.

Int. Cl. E04h *3/20*

U.S. Cl. 210—169 **18 Claims**



A filter device in the form of a gravel supporting tray structure for use, particularly in an aquarium water purification system employing a tertiary filter cycle utilizing a shallow gravel trickling filter with underwater aeration and sedimentation followed by anaerobic action and final tertiary cycle.

3,720,320

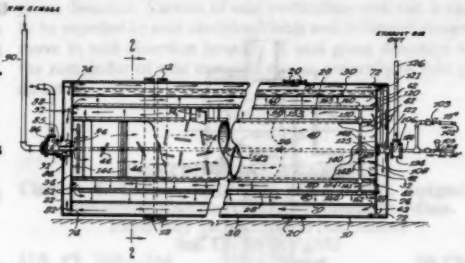
APPARATUS FOR HANDLING SEWAGE

Robert I. Fletcher, 620 Highwood Avenue, Greencastle, Ind.

Filed July 13, 1971, Ser. No. 162,181

Int. Cl. B01f *9/02;* **C02c** *1/04*

U.S. Cl. 210—199 **11 Claims**



A multi-pass, horizontal-rotating, continuous feed digester provides an effective, efficient aerobic digestion process for handling sewage which reduces pollution and promotes improved ecology.

3,720,321

RADIATION CROSSLINKED, SWELLED SEMIPERMEABLE MEMBRANES

Robert W. Coughlin, Bethlehem, Pa., and Richard D. Siegel, Waltham, Mass., assignors to Research Corporation, New York, N.Y.

Filed March 11, 1970, Ser. No. 18,705

Int. Cl. B07b *1/00;* **C08d** *1/00;* **C08f** *1/16*

U.S. Cl. 210—500 **4 Claims**

A semipermeable membrane of enhanced permeability or permselectivity which is formed by swelling a cross-linkable polymer film in a non-reactive, non-polymerizable swelling agent for a time sufficient to uniformly penetrate and swell the film, and thereafter subjecting the swollen film to high-energy ionizing radiation for a period of time and at a dose rate sufficient to cause cross-linking of the polymer.

3,720,322

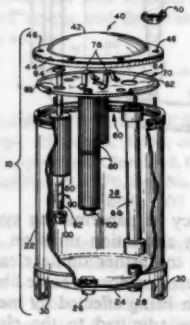
UPFLOW CARTRIDGE FILTER APPARATUS

John F. Harms, 705 Waterway Drive, North Palm Beach, Fla.

Filed Dec. 31, 1970, Ser. No. 103,165

Int. Cl. B01d *29/30*

U.S. Cl. 210—238 **4 Claims**



A pressure filter having a pressure vessel comprising an open top lower tank section adapted to be closed by a removable dome-shaped upper cover section, and an apertured filter support plate therebetween which divides the lower and upper sections into two chambers. A continuous rim gasket of sub-

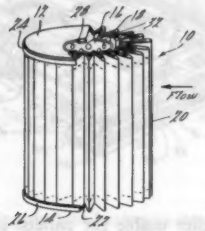
stantially V-shaped cross-section mounted on the peripheral margin of the aperture plate seals the two chambers. The upper face of the apertured plate is provided with a handle means which cooperates with the domed cover section to press an outlet opening therein into a sealed engagement with the upper open end of an outlet pipe which passes through the lower chamber. A plurality of filter elements are individually and sealingly supported through the other openings or apertures in the apertured plate.

3,720,323

DEPTH-TYPE FILTER FOR OPERATION WITH HIGH DIFFERENTIAL PRESSURES ACROSS THE FILTER

Raymond L. Landree, Madison Heights, Mich., assignor to The Bendix Corporation

Filed Nov. 10, 1969, Ser. No. 875,134
Int. Cl. B01d 27/06
U.S. Cl. 210—493 **14 Claims**



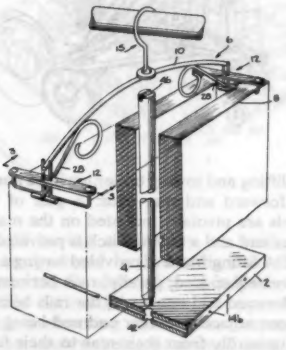
A filter assembly having a pleated depth-type filter element bonded at each end portion to metallic end caps by a thermosetting bonding agent being improved by having a flexible reinforcing strip bonded to the downstream side of the end portions of the pleated filter media continuously along the pleats thereof such that the reinforcing strip and the area of bonding to the filter media extends substantially above the bonding agent. The reinforcing strip has a substantially greater shear strength than the filter material and a porosity not greater than the filter material.

3,720,324

HANGER FOR FABRIC AND SUPPORTING ASSEMBLY THEREFOR

Milton Berkowitz, 500 East 85th Street, New York, N.Y.

Filed Jan. 6, 1971, Ser. No. 104,362
Int. Cl. A47f 5/00, 9/14
U.S. Cl. 211—45 **8 Claims**



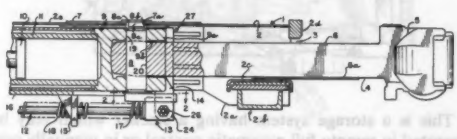
A hanger intended for use to support fabric lengths in pendent, vertical roll form. The hanger includes a main member, supported horizontally at its midpoint, with fabric securing units fixed to its ends. Each securing unit includes an arm supported below and transversely of the main member by a support. Two spaced, pointed pins secured to the arm are adapted to pierce and pass through edges of the fabric to hold it on the arm. The arm is stiffened by a rigid brace extending upwardly to the main member. A safety bar spaced above the arm rests on the pins to cover the points. The safety bar has an opening surrounding the support, which permits it to slide up and down the support without rotation.

3,720,325

END-OF-RAILWAY-CAR CUSHIONED DRAFT ASSEMBLY

Leopold S. Sitko, South Holland, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 14, 1970, Ser. No. 97,743
Int. Cl. B61g 9/02, 7/10
U.S. Cl. 213—8 **6 Claims**



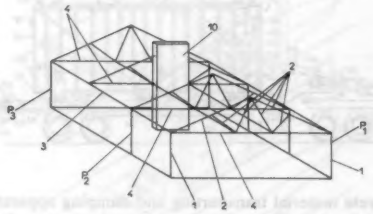
An end-of-railway-car cushioned draft assembly reciprocally mounted on the end of the center sill arrangement of a flat deck railroad car which arrangement includes a coupler pivotally connected to a slidable cushioning unit for pivotal horizontal movement of the coupler wherein the coupler pin is retained in a vertical position at the end of the cushioning unit housing and retained from falling therefrom by a coupler pin retainer assembly including a horizontal plate mounted on a bracket arrangement connected to the cushioning housing return spring lug used to connect the return spring unit of the cushioning assembly to the housing.

3,720,326

PROCESS AND INSTALLATION FOR CONSTRUCTING BUILDINGS PARTICULARLY DWELLINGS

Hubert Michel Henri Auguste Payraudeau, and Henri Andre Charles Joseph Payraudeau, both of Les Brouzils, France, assignors to Technab, Les Brouzils (Vendee), France

Filed July 6, 1970, Ser. No. 52,266
Int. Cl. B65g 7/04
U.S. Cl. 214—1 H **14 Claims**



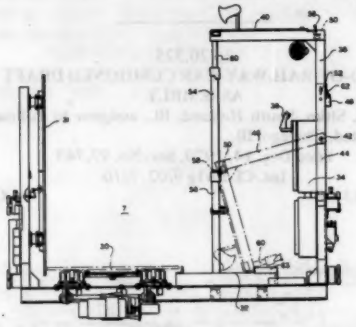
This invention relates to a process and installation for constructing dwellings, in which a framework is made of rails, the outer walls and partitions being brought on to the site in a lorry or container, connecting parts being fitted between the framework and the lorry or container, the partitions and walls being slid between them and fixed permanently on the spot, allowing very advanced factory finishing of walls and partitions.

3,720,327

AUTOMATIC STORAGE SYSTEM ORDER PICKER CAB CONSTRUCTION

James H. Snyder, and William E. Riedner, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 10, 1971, Ser. No. 197,424
Int. Cl. B65g 43/00
U.S. Cl. 214—16.4 A 6 Claims



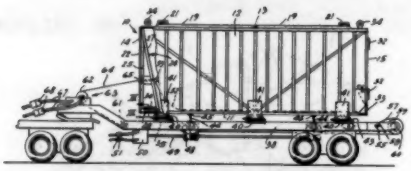
This is a storage system having a stacker which may be operated in remote full automatic control or in manually permitted automatic control from the cab on the stacker. The stacker has a pivotal overhead shield to protect the person operating the stacker manually. In the raised position a limit switch is closed which permits stacker moves only when the order picker is on board and holding closed two foot switches and two hand switches. Shuttle operation is restricted to specific off load points for removal of picked loads. The overhead shield when folded down permits full automatic operation with maximum vertical travel of the stacker and when in the upright position provides means under control of the operator to permit automatic operation of the stacker and protects the operator on the stacker from overhead falling objects.

3,720,328

DISCRETE MATERIAL TRANSPORTING AND DUMPING APPARATUS

Harold B. Mackenzie, 330 Naperville Rd., Wheaton, Ill.

Filed Feb. 9, 1971, Ser. No. 114,005
Int. Cl. B65g 67/02
U.S. Cl. 214—38 D 17 Claims



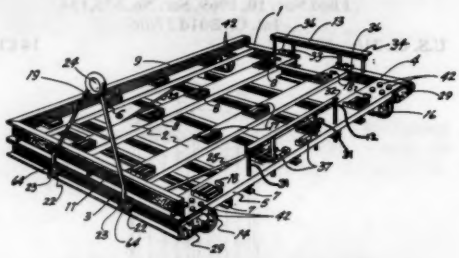
Discrete material transporting and dumping apparatus and method involve a container having an open top closed by hopper doors, a normally closed rear end through which, when open, contents of the container are adapted to be dumped by a pusher structure in the container chamber activated rearwardly by conveyance motivated means such as a hydraulic piston, a drive screw or a cable the end of which is accessible when the rear doors are opened for connection to a transporting conveyance-carried winch cable. The pusher structure is returned to the front end of the container after the dumping operation. The conveyance is adapted to be a flatbed truck trailer having tracks thereon receptive of bottom rollers on the container, whereby the container is adapted to be brought adjacent to a dump site on a railroad flatcar, transferred to the trailer, taken to the dump site, the pusher structure operated to unload the container, and the container then returned to the railroad car. The pusher may serve as a compacting ram.

3,720,329

PALLETIZED CARGO TRAILER

Edward R. Gamble, Clayton, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Mar. 16, 1971, Ser. No. 124,850
Int. Cl. B60p 1/52
U.S. Cl. 214—84 10 Claims



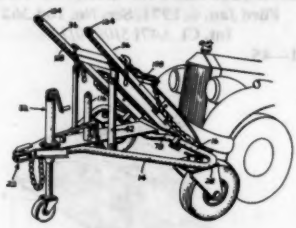
A cargo trailer usable for pallets, and the like, having a platform mounted on wheels. The front end is provided with a tow bar as means for coupling to transporting means for the cargo trailer and actuating wheel brake means. The cargo trailer further provides for track members which fit fork lifts so that said cargo trailers may also be transported by said fork lifts.

3,720,330

VEHICLE LIFTING AND TOWING TRAILER

Harry D. Forse, Anderson and C. Butz, Noblesville, both of Ind., assignors to Cleanamation, Inc., Anderson, Ind.

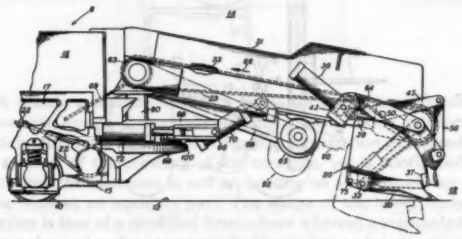
Filed Oct. 6, 1971, Ser. No. 187,030
Int. Cl. B60p 3/12
U.S. Cl. 214—86 A 12 Claims



A vehicle lifting and towing trailer having a horizontal main frame with forward and rear ends. A pair of transversely-spaced wheels are pivotally mounted on the main frame adjacent its rear end and a towing hitch is provided adjacent its forward end. A lifting frame is provided having a pair of elongated, transversely-spaced, parallel rails between the wheels and having forward and rear ends, the rails being secured to the main frame adjacent its rear end and being inclined forwardly and upwardly from their rear to their forward ends, and a support structure intermediate the ends of the main frame for supporting the rails adjacent their forward ends. A pair of lifting carriages is slidably mounted on the rails for

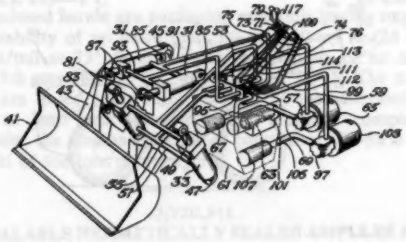
movement between their ends, and means are provided for removably connecting a part of a vehicle to be lifted and towed to the carriages. A pair of hydraulic rams is provided respectively independently acting upon the carriages for moving the same toward the forward ends of the rails thereby to lift a vehicle, the rams being actuated by a common hydraulic pump thereby equalizing the load on the carriages.

3,720,331
LOADING MACHINE
Haim J. Kamner, Palatine, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.
Filed Jan. 12, 1971, Ser. No. 105,904
Int. Cl. B66b 17/00
U.S. Cl. 214—90 R 13 Claims



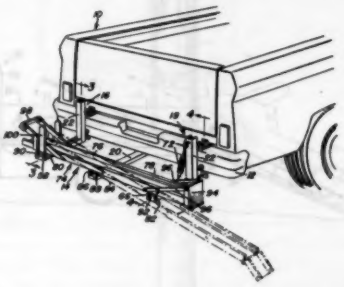
A loose rock loading machine having an improved two section bucket or dipper arranged to respond to suitable power and control means to automatically provide an initial, generally horizontal forward loading movement followed by an elevating dumping movement of the bucket onto a conveyor or storage hopper. During shovelling movements a shovel element extends from the bucket to capture large amounts of rock. During the dumping operation the shovel element retracts relative to the bucket. During downward return movement of the bucket to ground level the shovel element stays retracted in the bucket to clear the rock pile.

3,720,332
HYDRAULIC SYSTEMS
Lloyd A. Molby, Longview, Tex., assignor to R. G. Le Tourneau Inc., Longview, Tex.
Filed Apr. 27, 1971, Ser. No. 137,881
Int. Cl. B66f 9/00
U.S. Cl. 214—140 14 Claims



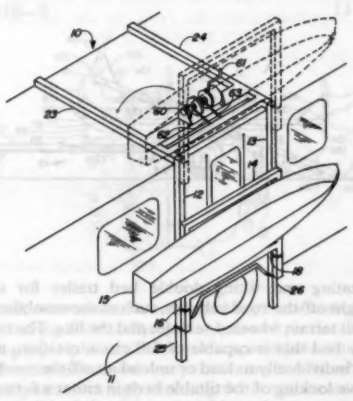
In a vehicle having a plurality of work performing means that are powered by hydraulic fluid the improvement characterized by a plurality of individual and separately operable hydraulic systems for operating the respective work performing means; the respective motors and pumps, preferably, being positioned relatively closely adjacent the work performing means for which they supply hydraulic fluid under pressure. Also disclosed are (1) a type of control valve that is operable to start a motor driving a respective pump simultaneously with directing the high pressure hydraulic fluid output of the pump to operate the work performing means; (2) other specific structural features; and (3) advantages.

3,720,333
MOTORCYCLE CARRIER
Jacard M. Vaughn, 1709 Lynn Grove Dr., Manhattan Beach, Calif.
Filed Dec. 29, 1970, Ser. No. 102,334
Int. Cl. B60r 9/00
U.S. Cl. 214—450 11 Claims



A support, loading and unloading ramp and trailer combination for mounting on the rear or other peripheral portion of a motor vehicle and operable to support a two wheeled vehicle therefrom in elevated position above the ground, load and unload a two wheeled vehicle relative to the supporting vehicle and couple to the rear of the two wheeled vehicle for twoing therebehind. The support includes three mounting brackets for semipermanent support from points spaced along a peripheral portion of a supporting vehicle and a ramp removably anchored at its opposite ends to the remote supports and pivotally supported from the intermediate support for oscillation about a horizontal transverse axis.

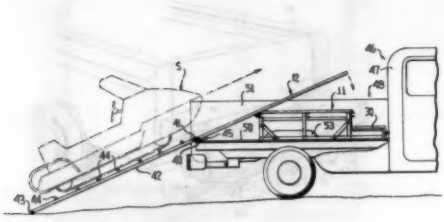
3,720,334
BOAT AND EQUIPMENT LOADING SYSTEMS
Albert A. Permut, and Ronald M. Permut, both of 11718 Greenlane Drive, Potomac, Md.
Filed May 17, 1971, Ser. No. 143,865
Int. Cl. B60r 9/00
U.S. Cl. 214—450 7 Claims



A boat and equipment loading system is disclosed in which a single individual may manipulate, position, load and stow a

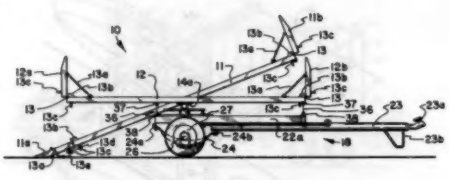
boat and other equipments at elevated heights on structures or vehicles classified as recreational vehicles inexpensively with ease and precision.

3,720,335
SNOWMOBILE LOADING AND UNLOADING DEVICE FOR PICKUP TRUCKS
Sonne G. Ward, P.O. Box 117, Newdale, Idaho
Filed Nov. 5, 1971, Ser. No. 196,103
Int. Cl. B60p 1/28
U.S. Cl. 214—505 **13 Claims**



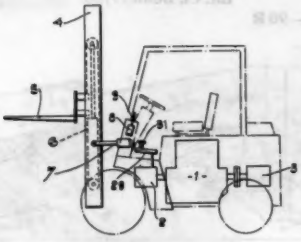
This disclosure relates to a device which may be readily mounted within conventional pickup trucks for the transport of snowmobiles and like vehicles and wherein the device includes a base having a platform pivotally mounted thereon, the platform engaging the rear portion of the truck bed in the tilted position thereof and having associated therewith ramp means which are connected directly to the platform and forming generally a planar extension thereof. The device provides for a relatively flat loading and unloading angle and at the same time assures full support of the vehicle at all times during the loading and unloading thereof.

3,720,336
ROTATING AND TILTING DOUBLE BED TRAILER
Glen W. Murray, 1519 West 4180 South, Salt Lake City, and Donald C. Coy, 1021 North 400 West, Bountiful, both of Utah
Filed Oct. 29, 1971, Ser. No. 193,795
Int. Cl. B60p 1/28
U.S. Cl. 214—505 **7 Claims**



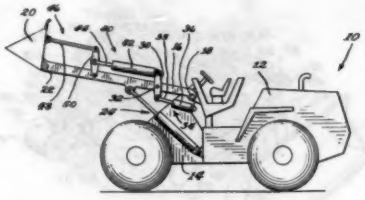
A rotating and tilting double bed trailer for use with lightweight off-the-road vehicles, such as snowmobiles, motorcycles, all terrain wheeled vehicles and the like. The trailer has a double bed that is capable of full circle rotation, and each bed tilts individually to load or unload an off-the-road vehicle. A positive locking of the tiltable beds in either a forward position or a reversed position is accomplished by a locking turntable plate on which the tiltable beds are mounted. The tiltable beds have fold-up front and rear bed extensions hinged to their ends to help contain items carried on the bed, and to serve as a ramp means during loading and unloading of the trailer.

3,720,337
LOAD HANDLING VEHICLES
John Warrender Franklin, Coventry, England, assignor to Total (Power Hydraulics) Limited, Pontardawe, Glamorgan, England
Filed Mar. 19, 1971, Ser. No. 126,085
Int. Cl. B66f 9/20
U.S. Cl. 214—674 **9 Claims**



In a load handling vehicle, for example a fork lift truck, having a prime mover, hydraulically actuated load handling means, and a pump drivingly connected with the prime mover for supplying hydraulic fluid to the load handling means, a throttle or other power output control means of the prime mover is linked with a valve controlling actuation of the load handling means so that the power output of the prime mover is automatically increased when the load handling means is actuated.

3,720,338
EARTH WORKING IMPLEMENT
Don R. Stout, and Jorge Klein, both of Bettendorf, Iowa, assignors to J. I. Case Company, Racine, Wis.
Filed Oct. 26, 1970, Ser. No. 83,877
Int. Cl. E02f 3/00
U.S. Cl. 214—776 **2 Claims**



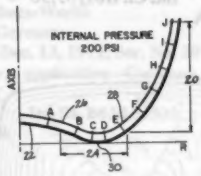
A vehicle having one end of a boom pivoted on a support between raised and lowered positions with an implement pivoted on the free end of the boom. First and second fluid motors respectively have first elements pivoted on the implement and the support and second elements pivoted on a link which is supported on the boom intermediate the ends. In one embodiment, the fluid rams are both located on the same side of the boom and in the second embodiment, the fluid rams are located on opposite sides of the boom.

3,720,339

PLASTIC CONTAINER FOR PRESSURIZED MATERIALS-A

Bhupendra N. Khetani, Vernon, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 24, 1970, Ser. No. 75,094
Int. Cl. B65d 1/02
U.S. Cl. 215—1 C 6 Claims



A plastic container such as a bottle for pressurized fluent materials having a specially designed lower body portion which minimizes areas of high stress concentration generated as a result of the pressure of the contents, yet is configured such that the container is self supporting on a horizontal surface without an auxiliary part. The shape of the lower body portion is that of a modified hemisphere wherein a segmented hemispherical surface tangentially blends into an intermediate portion, the center of which defines a seating ring for the container, the radius of curvature of the intermediate portion being such that the diameter of the seating ring is between 25 to 80 percent of the diameter of the container body immediately adjacent the lower body portion. A convex central base portion is tangential to the other end of the intermediate portion. The container is preferably formed from a high tensile strength polymer, the major component of which is polymerized from a monomer having one or more nitrile groups in its molecular structure.

3,720,340

BOTTLE CONSTRUCTED OF A BLEND OF POLYMERS FROM METHACRYLONITRILE, MONOVINYLIDENE AND RUBBER COMPOUNDS

Yoon Chai Lee and Quirino A. Trementozzi, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 776,250, Nov. 15, 1968, now Patent No. 3,615,710. This application Feb. 11, 1971, Ser. No. 114,690
The portion of the term of the patent subsequent to June 24, 1986, has been disclaimed
Int. Cl. B32b 27/30, 27/32; B65d 23/00
U.S. Cl. 215—1 C 15 Claims

Disclosed herein are packaging materials having oxygen permeability of no more than 3.0 cc./100 sq. in./24 hr./atoms/mil at 73° F. and water permeability of no more than 3.0 gms./24 hr./100 sq. in./mil at 73° F. The materials are based upon interpolymers of methacrylonitrile with at least one monovinylidene aromatic compound wherein the methacrylonitrile constitutes 70–98% by weight of the interpolymer.

3,720,341

RESEALABLE HERMETICALLY SEALED AMPULES AND CLOSURE THEREOF

Walter Greenfield, Ardsley, and Raymond Berg, Mount Vernon, both of N.Y., assignors to Cooper Laboratories, Bedford, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,204
Int. Cl. B65d 23/00
U.S. Cl. 215—6 4 Claims

A resealable hermetically sealed ampule construction, and a closure adapted for use therewith, are provided. The ampule is a hollow cylindrical glass body having hermetically sealed ends, and provided with scoring to facilitate opening of the ampule by breaking at the score line. The ampule is fitted with a first friction fitted cylindrical sleeve of a semirigid plastic material, such as nylon, polyethylene, or the like, provided with an annular, inwardly projecting shoulder adapted to engage with the scoring on the ampule. There is also provided a second sleeve, slidably engaged and friction fitted to the said first sleeve which serves, when slightly deformed by the user, to transmit force through the shoulder of the first sleeve to the scoring of the ampule. Such force serves to break open the ampule at the score without shattering the structure and endangering the user. The second sleeve is provided with the

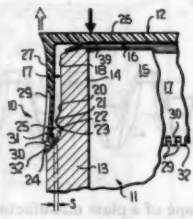
means to engage the upper portion of the ampule above the score line so that the second sleeve and the ampule cap can be withdrawn by slidably removing the second sleeve from engagement with the first. Once opened the ampule can be resealed by replacing the second sleeve in engagement with the first sleeve. An optional additional feature of the ampule is the provision in the upper part of the second sleeve, above the ampule cap, of at least one additional breakable ampule. In such a fashion, analytical testing procedures and the like are greatly facilitated by the employment of hermetically sealed, precisely measured quantities of reagents, which can be employed in sequential fashion in a single, resealable ampule construction.

3,720,342

SAFETY CLOSURE

Peter A. Vercillo, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,559
Int. Cl. B65d 55/02
U.S. Cl. 215—9 11 Claims



This disclosure relates to a safety closure associated with a container having a normally open upper end portion, the closure having a peripheral skirt in telescopic relationship to the container end portion with cooperative means therebetween for normally interlockingly securing the container and safety closure to each other, the periphery skirt being constructed from material having a slow rate of resilient return, and means

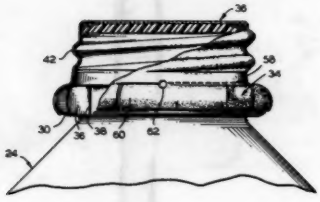
for temporarily radially outwardly deflecting the peripheral skirt to disengage the interlocking means whereby removal of the safety closure from the container may take place during such time as is required for the peripheral skirt to return to its normal nondeflected interlocked condition.

3,720,343

TAMPER PROOF BOTTLE CAP

Edwin M. Irish, Jr., St. Dorids, Pa., assignor to Erin Industries, Inc., Villanova, Pa.

Filed Nov. 19, 1971, Ser. No. 200,397
Int. Cl. B65d *55/02*
U.S. Cl. 215—38 A 9 Claims



A milk bottle cap, apparatus and method, especially adapted as tamperproof closures for plastic milk bottles and the like. The bottle cap comprises a laminated disc structure containing a top layer of a rigid material, preferably an impervious plastic material, an intermediate layer which can be aluminum foil or the like, and a plastic foam disc for contact with the bottle opening. The disc, when placed on the bottle opening, is then sealed in place over the bottle opening and maintained in place by a heat shrink tube which is heat shrunk around and partially over the closure disc, and sealed thereto, and having a depending skirt in intimate sealing contact with the threads on the neck of the bottle. A tear strip is provided to initially break the seal to permit removal. The heat shrink material has sufficient strength and rigidity whereby the cap can be re-engaged, after removal, on the bottle threads for reclosure of the bottle.

3,720,344

TITLE MOLDED TRAYS WITH MEANS TO PREVENT JAMMING

Marcus de Vries, Leeuwarden, Netherlands, assignor to N. V. Leeuwarder Papieruaren Fabriek, Leeuwarden, Netherlands

Continuation of Ser. No. 795,000, Jan. 29, 1969. This application Oct. 26, 1970, Ser. No. 84,190
Int. Cl. B65d *81/16, 85/32*
U.S. Cl. 217—26.5 1 Claim

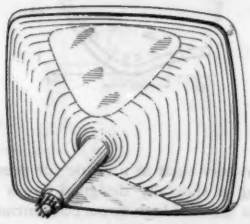
A tray in the shape of a plate manufactured from fiber pulp or a similar material, particularly an egg tray is provided with means for preventing the walls of recessed portions from being jammed one on the other when stacking the plates. Between a number of recessed portions, a number of ridges or dams, disposed higher than the dams or ridges between the other recessed portions are provided. The higher dams or ridges are so distributed all over the plate surface and according to such a pattern that mutually equally designed plates, only when turned at an angle of 180°, can be so placed one on top of the other that then only the higher ridges or dams serve as supports between two successive plates.

3,720,345

TELEVISION BULB WITH IMPROVED STRENGTH

James A. Logue, Columbus, Ohio, assignor to Owens-Illinois, Inc.

Filed June 8, 1970, Ser. No. 44,016
Int. Cl. H01j *61/30*
U.S. Cl. 220—2.1 A 5 Claims



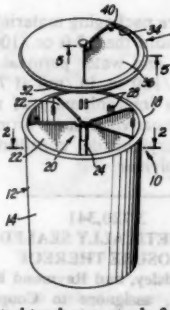
A wide-angle color television picture bulb comprising a generally rectangular glass faceplate having horizontal and vertical axes, said horizontal axis being longer than the vertical axis, a substantially wide-angle hollow glass funnel having a generally tubular neck at one end, a generally tubular flaring yoke area extending from the said neck, and side walls joined to and diverging from said yoke area to a portion joined to said faceplate. The funnel side walls which extend generally parallel to the horizontal axis of the faceplate have a central portion thereof which is substantially flat in all cross sections thereof and is smoothly interconnected with the remaining portions of said side walls. The funnel side walls which extend generally parallel to the vertical axis of the faceplate have portions thereof which are substantially bowed outwardly relative to the vertical axis and side walls which extend generally parallel to the horizontal axis of the faceplate.

3,720,346

COMPARTMENTED TRASH RECEPTACLE

David T. Cypher, 451 East Rowland Apt. 22, Covina, Calif.

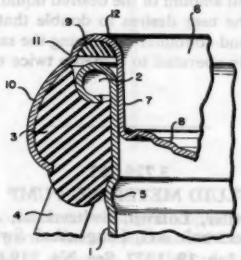
Filed Jan. 18, 1971, Ser. No. 107,132
Int. Cl. B65d *11/08, 25/06*
U.S. Cl. 220—22.3 1 Claim



A compartmented trash receptacle for segregating different types of trash, such as paper, cans, glass, and so forth. The receptacle has a container with inner partitions which define separate trash compartments for the different trash materials and are adjustable to vary the sizes of the compartments. The receptacle has a cover which may be removed when the receptacle is in use in the home and has a shuttered opening which

may be aligned with each trash compartment by rotation of the cover relative to the container to permit emptying of the contents from the different compartments into different trash receivers.

3,720,347
PACKAGING CONTAINER
Karl Heinz Stoffregen, Braunschweig, Germany, assignor to Schmalback-Lubeca-Werke Aktiengesellschaft, Braunschweig, Germany
Filed Dec. 13, 1971, Ser. No. 207,316
Claims priority, application Germany, Dec. 18, 1970, P 20 62 412.8
Int. Cl. B65d 53/00
U.S. Cl. 220—46 R 9 Claims

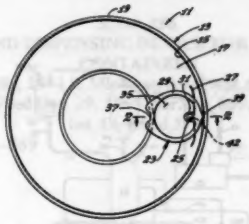


A container of the type wherein a removable sealing ring is positioned between a container body and a closure member and forms a seal therebetween. The container has been improved to prevent leaking during cooling following heating to sterilize at which time a vacuum exists within the container by providing a second seal which is effective only when there is axial telescoping displacement of the closure member relative to the container body as may occur when a vacuum exists.

3,720,348
OPENING DEVICE FOR CANS
Kjell Mossvoll Jakobsen, Ronnbackegatan 81, Malmo, Sweden
Filed June 29, 1970, Ser. No. 50,477
Claims priority, application Sweden, July 1, 1969, 9314/69
Int. Cl. B65d 17/24
U.S. Cl. 220—54 16 Claims

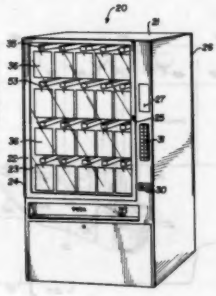
A vacuum sealed can which has in its top a scored area that can be pulled open by means of a pull tab and particularly a can of the type which is filled with powderized material such as coffee or dried milk, has spaced apart from the scored area a weakened preferably depressed wall portion. Piercing of this latter area prior to pulling the tab gradually releases the vacuum in the can thereby avoiding scattering of at least part of the contents of the can by abrupt release of the vacuum upon pulling of the tab.

3,720,349
EASY OPENING CONTAINER WALL
Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio
Filed Aug. 17, 1970, Ser. No. 64,291
Int. Cl. B65d 17/20
U.S. Cl. 220—54 18 Claims



An easy opening container wall including a container wall having a line of weakness therein defining a tear portion at least partially removable from the container wall and a tab affixed to the tear portion to initiate severance thereof from the container wall. The tab has a rupturing portion which overlies a location on the container wall closely adjacent the line of weakness. The tab has a hinge line which extends between said location and the region of attachment of the tab to the tear portion so that by manipulating the tab, a segment ot the tear portion is forced inwardly generally about a bend line. The tear portion has a weakened region therein positioned to facilitate the inward bending of the segment about the bend line. Although various kinds of tabs may be used, the tab preferably includes a lever portion and an attachment portion joined by a connecting wall. A marginal portion of the tab is bent inwardly to form a curl having a double layer portion which is engageable with the connecting wall to support the latter. According to another feature of the present invention, the tab is made in a strip of sheet material and the carrying strip therefor is positioned at the lifting end of the tab.

3,720,350
VENDING MACHINE
William A. Patrick, Mayflower, Ark., assignor to Polyvend, Inc., Conway, Ark.
Filed June 19, 1970, Ser. No. 47,257
Int. Cl. G07f 11/00
U.S. Cl. 221—14 7 Claims

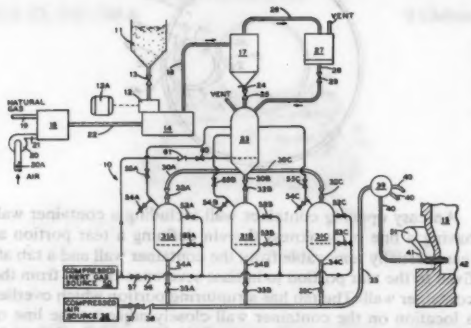


An improved vending or dispensing machine having individually driven panel mounted replaceable dispensing modules with theft-proof merchandise supporting and dispensing means in the form of an endless carrier belt or chain having article dispensing projections.

3,720,351
PULVERIZED FUEL DELIVERY SYSTEM FOR A BLAST FURNACE

Earl E. Coulter, Akron; Fritz L. Hemker, Wadsworth, and Elias A. Kazmierski, Akron, all of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Division of Ser. No. 799,773, Feb. 17, 1969, abandoned. This application May 6, 1971, Ser. No. 140,905
Int. Cl. B67b 7/00
U.S. Cl. 222—1 9 Claims

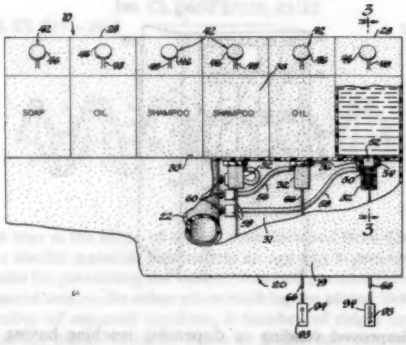


A pulverized fuel delivery system for a blast furnace in which pulverized coal is delivered in dense phase fluidized form into the blast furnace from gas pressurized tanks that are placed in communication, one at a time, in cyclical sequence with a pneumatic transport means. The tank gas pressure is regulated in accordance with the blast furnace wind rate to control the weight flow rate of pulverized coal into the furnace and the transport gas flow rate is regulated in accordance with the fuel weight flow rate to maintain a prescribed transport gas flow rate per pound of coal delivered to the furnace.

3,720,352
DEVICE FOR SELECTIVELY DISPENSING LIQUIDS

Robert L. Kozlowski, 29984 Woodhaven Lane, Southfield, Mich.

Filed Oct. 15, 1970, Ser. No. 80,966
Int. Cl. B67d 5/60
U.S. Cl. 222—132 11 Claims



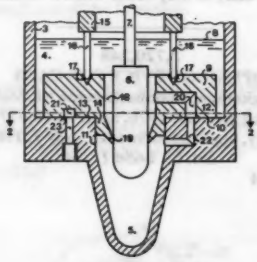
A device adapted to be operated in conjunction with a shower fixture for selectively dispensing one or a plurality of liquids into the water stream discharged by the shower nozzle. The device has a plurality of containers, each adapted to store a quantity of liquid, such as, but not limited to, a perfume, a soap, a detergent, a deodorant, an antiseptic, or other chemical substances desired by the user of the shower. Each container has a valve which is manually operated by the user to selectively dispense a predetermined amount of one or more of the liquids from their associated containers to the water stream. The containers are preferably constructed of a transparent material, such as transparent plastic, to permit the user of the shower to visually determine the amount of the liquid remaining within each container.

In one example of the invention, an even number of containers are mounted on a support member which, in turn, is carried by the shower fixture. Each of half of the containers is filled with a different liquid, such as for example, soap, oil and a perfume, while each of the remaining half of the containers duplicates the contents of each of the first containers, so that the user may, by manually operating one of the valves, dispense a defined amount of the desired liquid into the water stream and, if the user desires to double that quantity, the valve of the second container containing the same liquid may be simultaneously operated to dispense twice the quantity of the liquid.

3,720,353
FLUID METERING PUMP

Christian Stettler, Lotzwil, Switzerland, assignor to Greiner Electronic AG, Langenthal, Switzerland

Filed Jan. 19, 1972, Ser. No. 219,014
Claims priority, application Switzerland, Apr. 22, 1971, 5,873/71
Int. Cl. B67d 5/40
U.S. Cl. 222—380 9 Claims



A fluid metering pump, including a housing containing a fluid storage chamber, a metering chamber and an outlet, reversing valve means operable between filling and dispensing positions for connecting said metering chamber alternately with said storage chamber and with said outlet, respectively, and plunger means operable in one direction to draw fluid from said storage chamber into said metering chamber and in the opposite direction to force fluid from said metering chamber outwardly of said housing via said outlet. In the preferred embodiment, the reversing valve means includes a valve body that is rotatably connected with said housing for displacement between said filling and dispensing positions, said storage and metering chambers being arranged on opposite sides of said valve body and said plunger means being axially slidable in a central through bore contained in, and coincident with the axis of rotation of, said valve body.

3,720,354

DISPENSING MICROPIPETTE APPARATUS HAVING DISPOSABLE PARTS

Michael E. Drummond, West Chester, and John E. Robinson, Springfield, both of Pa., assignors to Drummond Instrument Company, Broomall, Pa.

Filed Sept. 24, 1970, Ser. No. 75,203
Int. Cl. G01f *11/00*
U.S. Cl. 222—386 10 Claims

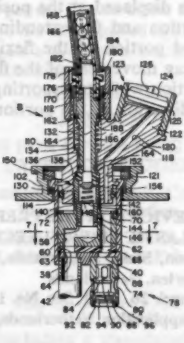
This invention is a dispensing micropipette apparatus having disposable parts, which apparatus includes a capillary tube into which fluid is drawn in the desired amount by a wire plunger. The upper end of the wire plunger is releasably secured by spring means to a holder which includes a finger loop for operating the wire plunger axially within the capillary tube, for drawing fluid into, and dispensing fluid from, the apparatus in a one-handed operation. The tube and plunger contaminated by the fluid may then be dropped from the holder by operation of the spring means.

3,720,355

PORTABLE BEER SIPHON DEVICE

Mack S. Johnston, Rolling Hills, Calif., assignor to Draft Systems, Inc., Northridge, Calif.

Continuation-in-part of Ser. No. 889,485, Dec. 31, 1969, Pat. No. 3,608,790, which is a continuation-in-part of Ser. No. 819,706, April 28, 1969, Pat. No. 3,610,478. This application June 29, 1970, Ser. No. 50,822
Int. Cl. B65d *83/00*
U.S. Cl. 222—400.7 6 Claims



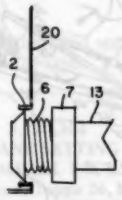
The device includes a keg adapter mounted within a 1 ½ inch keg opening and a dispenser coupler secured to the keg adapter, the adapter and coupler having gas and liquid passages for permitting ingress of gas into the keg and outflow of beer from the keg. The gas passage receives gas from a hand operated portable plunger type pump with the beer dispensing outlet including a spout. The coupler is secured to the adapter by rotating the former relative to the latter which, in turn, opens normally closed gas and liquid valves in the adapter. A liquid valve is disposed in the coupler and displacement of the spout opens the valve to permit outflow of beer therefrom.

3,720,356

TAPPING AND DISPENSING DEVICE FOR FLUID FILLED CONTAINERS

Archie W. Mills, 2941 S. Michigan Ave., Apt. 514, Chicago, Ill.

Filed Dec. 29, 1969, Ser. No. 888,334
Int. Cl. B65d *5/74*
U.S. Cl. 222—569 3 Claims



This invention provides a fluid container adapted to easily and detachably mount a dispensing means in a liquid-tight relation, the container having a wall with an opening and an overlying retractable cover portion which is larger in area than the opening and sealing the opening prior to the insulation of the dispensing means, and a series of flaps integral with the wall surrounding the periphery of the opening and adapted to be deflected by the dispensing means to permit entry of the dispensing means into the container and returned to their initial position in sealing engagement with the dispensing means.

3,720,357

WIRE HANGER ATTACHMENT

Richard J. Bushon, 113 Palo Verde, Superior, Ariz. 85273

Filed Feb. 17, 1971, Ser. No. 115,986
Int. Cl. A47j *51/08*
U.S. Cl. 223—85 1 Claim

An attachment is provided to be utilized in pairs, one on each side of a conventional coat hanger, to function as a stop means for each shoulder strap of a garment. Each attachment comprises an elongated strip of thin,

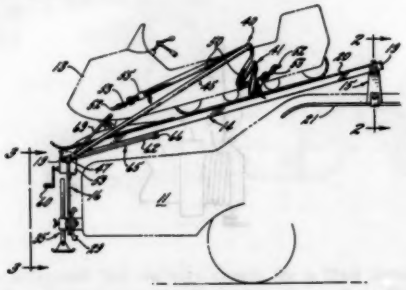
flexible material with first and second circular holes disposed near opposite ends of the strip with a cut running parallel to the strip side between the two holes entering each approximately tangentially. Intermediate along the length of the cut, a widened portion is provided to facilitate introduction of the attachment onto the hanger. Each of the pair of attachments is pushed onto one hanger corner and slid inwardly until the horizontal and angled wire portions snap into place in the two holes.

3,720,358

CAR TOP CARRIER FOR SNOWMOBILES AND THE LIKE

Owen F. McIntire, P. O. Box 230, Highway 51, Mercer, Wis.

Filed April 23, 1971, Ser. No. 136,885
Int. Cl. B60r *19/02*
U.S. Cl. 224—42.08 10 Claims



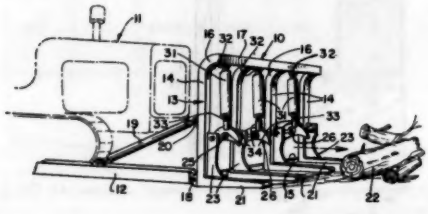
A carrier for transporting a snowmobile on top of an automobile includes a support deck which is mounted on a slant generally over the trunk of the automobile and is supported pivotally at its front end by a bracket attached to the rain gutters. The back end of the deck rests over the trunk and upon an upstanding support attached to the rear bumper. A loading boom is mounted on the support to pivot between pickup and load positions by means of an actuator and includes a sling for carrying the snowmobile up onto the deck as the boom is pivoted from the pickup position to the load position. A lifter also mounted pivotally on the support is positioned to engage the underside of the deck and is operable to raise the latter into a substantially level position in order to gain access to the trunk.

3,720,359

TRACTOR-MOUNTED WOOD WASTE BREAKING APPARATUS

Ernest P. Cox, P.O. Box 154, Lolo, Mont. 59847

Filed Oct. 14, 1971, Ser. No. 189,170
Int. Cl. B26f *3/00*
U.S. Cl. 225—97 11 Claims



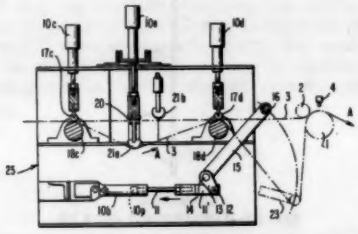
A mounting frame attaches directly to the customary C-frame which supports a bulldozer blade on a tractor. The mounting frame has forwardly projecting tines at its bottom and fixed vertical wood breaking teeth rise from the tines. Cooperating vertically swingable teeth arranged between pairs of the fixed teeth are powered by overhead hydraulic rams on the mounting frame which derive power from the hydraulic system of the tractor.

3,720,360

METHOD AND APPARATUS FOR CORRECTING THE ZIGZAG MOVEMENT OF A FLEXIBLE STRIP

Sigeru Tezuka, Shinichi Tanaka, and Selichi Taguchi, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 29, 1971, Ser. No. 202,922
Claims priority, application Japan, Dec. 28, 1970, 46/120,324
Int. Cl. B65h *23/02*
U.S. Cl. 226—3 4 Claims



A method of correcting the zigzag movement of a flexible strip as it is being transported in a longitudinal direction, which comprises the steps of forming a loop at the flexible strip supply side of the zigzag moving portion of the strip when the zigzag movement of the strip takes place while the strip is transported, tentatively stopping the transportation of the flexible strip before entering the loop, extending one side of the end of the strip in zigzag direction, and thereafter feeding the zigzag portion of the strip so as to correct the zigzag movement of the flexible strip at the zigzag moving portion while moving the zigzag moving portion of the strip. This method is performed by apparatus for correcting the zigzag movement of a flexible strip, which has a detecting portion for detecting the displacement of the position of the strip during transportation of the flexible strip, a control portion for selecting either the plus or minus of the detected signal upon receipt, and a strip extending portion for stopping the transportation of the strip for a predetermined section after forming a loop of the flexible strip at the entering side of the portion displaced at the position by the order of the control portion and for extending one side of the end of the stopped portion of the flexible strip, thereby correcting the zigzag movement of the flexible strip at the zigzag moving portion while transporting the flexible strip in a longitudinal direction at the portion displaced at the position.

3,720,361

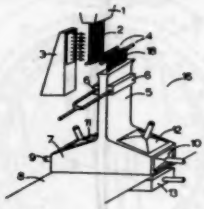
PROCESS AND DEVICE FOR THE PREPARATION OF A PLASTIC FIBER FLEECE

Johan P. Nommensen, Stein, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

Filed March 26, 1971, Ser. No. 128,401
Claims priority, application Netherlands, March 26, 1970, 7004349
Int. Cl. B65h *17/32*
U.S. Cl. 226—7 5 Claims

Process and apparatus for the preparation of a plastics fiber fleece, wherein filaments are moved towards a conveying

plane and, prior to their lying down on the conveying plane, are zigzagged by means of air flows slanting upwards which



are effected by simultaneously injecting air on one side of a free space and suctioning off air on the opposite side of the space whereby the air flows hit the filaments in the free space.

3,720,362

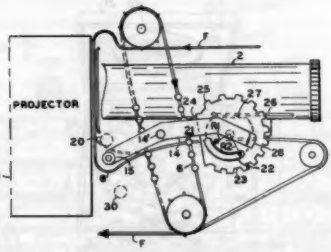
LOOP SETTING MEANS FOR A MOTION PICTURE PROJECTOR

Robert M. Kongelka, 315 Allison Ave., Houston, Pa.

Filed June 7, 1971, Ser. No. 150,507

Int. Cl. B65h *23/16*

U.S. Cl. 226—36 **3 Claims**



Automatic loop setting and restoring means to restore the loop in the motion picture film on either side of the film gate. If the loop is lost and the film is pulled tight, a lever is triggered which in turn triggers a gear drive mechanism which rotates the lever to restore the loop.

3,720,363

APPARATUS FOR OPERATING ON TAPE IN TAPE CARTRIDGES

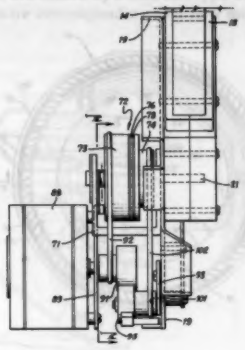
William C. Bennett, Menlo Park, Calif., assignor to Novar Corporation

Original application Mar. 25, 1970, Ser. No. 22,619. Divided and this application Feb. 22, 1972, Ser. No. 227,757

Int. Cl. B65h *17/20*

U.S. Cl. 226—51 **4 Claims**

An apparatus including a transducer and a capstan for operating on tape in a tape cartridge having means for receiving the cartridge and positioning the transducer with respect to the cartridge, guide means for guiding the tape past the transducer, drive means for reversibly driving the capstan whereby to move the tape past the transducer



selectively in either direction, and sensing means for sensing the beginning and end of tape.

3,720,364

TOOL FOR DRIVING AND SETTING HEADLESS NAILS OR METAL TACKS

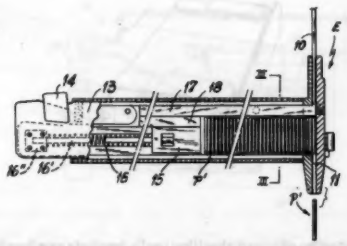
Bruno Maestri, Via Vincenzo Toppa 26, Milan, Italy

Continuation-in-part of Ser. No. 856,001, Sept. 8, 1969, abandoned. This application March 24, 1971, Ser. No. 127,634

Claims priority, application Italy, Sept. 18, 1968, 21372 A/68; Feb. 20, 1969, 13102 A/69

Int. Cl. B27f *7/14*

U.S. Cl. 227—109 **10 Claims**



An improved tool for driving and setting headless nails or metal tacks is disclosed, comprising a driving device which is associated with a novel magazine essentially consisting of a casing closed by a slidable member, both defining therein a passage for housing and guiding a plurality of headless nails which are elastically pushed into a T-contoured ejection passage where they are driven by a ribbed and pointed ejector connected to the driving device. Moveable parts inside the magazine can partially take up or fill the passage for housing and guiding headless nails of different lengths.

3,720,365

EMBOSSED CONTAINER

Steve A. Unger, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

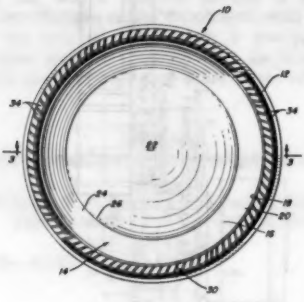
Filed Sept. 21, 1970, Ser. No. 75,654

Int. Cl. B65d *1/34*

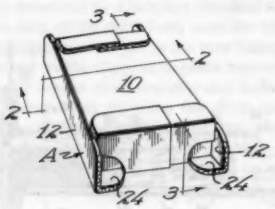
U.S. Cl. 229—2.5 **11 Claims**

A container made of foam plastic and having improved strength and appearance includes a rim embossed to accept

printing thereon, a sidewall integral with the inner edge of the rim at the uppermost portion of the sidewall, said sidewall tapering inwardly and bowing outwardly slightly, and a bottom integral with the lowermost portion of the sidewall, said bottom bowing inwardly slightly.



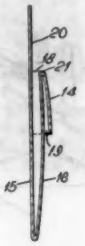
3,720,366
BOOK FOLDER
Daryl T. Martin, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Feb. 16, 1971, Ser. No. 115,503
Int. Cl. B65d 5/02
U.S. Cl. 229—37 E **7 Claims**



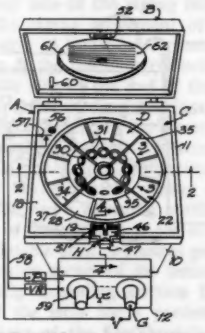
A folder for books and the like includes a sleeve having top and bottom panels connected by side wall panels. Closure panels are connected to at least one of the top and bottom panels. The ends of the side wall panels and tabs connected to the top panel form right angular projections extending beyond the end closure.

3,720,367
CONTAINERS
Adrien Patrick Rayner, Alperton, England, and Bryan Gordon Howell, Willowdale, Ontario, Canada, assignors to The Metal Box Company Limited, London, England
Filed July 21, 1970, Ser. No. 56,855
Claims priority, application Great Britain, July 23, 1969, 36,957/69
Int. Cl. B65d 33/16, 77/10
U.S. Cl. 229—62 **2 Claims**

A bag, particularly for coins, is made from heat-sealable film material and has a pouch adjacent to the open end of the bag and extending across the front of the bag with the mouth of the pouch directed towards the bottom of the bag. The novel feature is the provision of a free flap which extends from the back of the bag and which has a length such that the bag can be closed by folding the flap over the pouch and pushing it indiscriminately without flattening into the pouch so that the bulk of the flap, together with the contents of the bag, retains the bag in the closed condition.



3,720,368
CENTRIFUGE WITH BLOOD SAMPLE HOLDING MEANS
Derek R. Allen, Corona del Mar, Calif., assignor to Bio-Dynamics, Inc., Santa Ana, Calif.
Filed July 15, 1971, Ser. No. 162,829
Int. Cl. B04b 9/12
U.S. Cl. 233—26 **12 Claims**

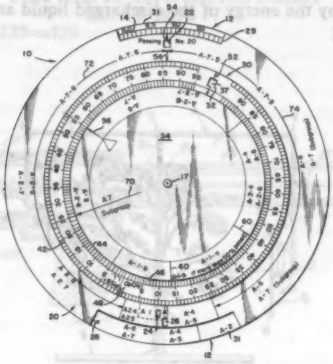


A centrifuge with a rotor adapted to simultaneously hold and centrifuge a plurality of blood separation tubes and hematocrit tubes; also provided with speed control over a wide range, from 4,000 r.p.m. for urine specimen centrifugation, up to 10,000 r.p.m. for rapid hematocrit preparation; also provided with a protective lid latch correlated with a combined brake actuator and circuit-opening switch to cut off power when the lid is lifted.

3,720,369
SOIL ANALYSIS AND DEVICE THEREFOR
Samuel Laboy Alvarado, Esparta St. No. 60, Guaynabo, P.R.
Filed March 24, 1971, Ser. No. 127,546
Int. Cl. G06c 1/00
U.S. Cl. 235—78 **9 Claims**

A method of determining soil classification characteristics according to known grading systems to facilitate construction

of highways, airfields and the like. A computer device correlated thereto to eliminate the necessity of complex tables and



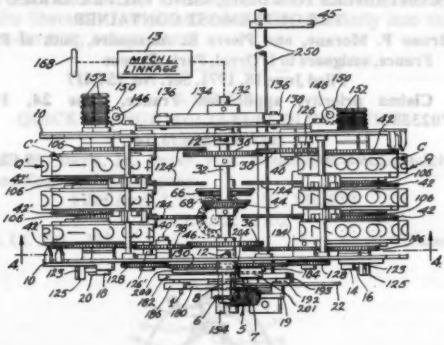
charts and a knowledgeable user thereof in arriving at soil classification determination.

3,720,370

REMOTELY OPERABLE REGISTER RESETTING MECHANISM

Einar T. Young, Newtown Square, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed March 28, 1972, Ser. No. 238,782
Int. Cl. B67d *5/26*
U.S. Cl. 235—94 R **13 Claims**



A register has a plurality of groups of decimally relate number wheels which are driven during a dispensing operation to indicate the quantity and cost of a separable commodity (e.g., gasoline) being dispensed. A motorized mechanism, driven by a motor in the housing of the dispensing apparatus (which motor is energizable from a remote point), is utilized for resetting the number wheels to zero after the completion of a dispensing operation. The motor drives a shaft whose rotation releases a latch and also effects the resetting of the number wheels.

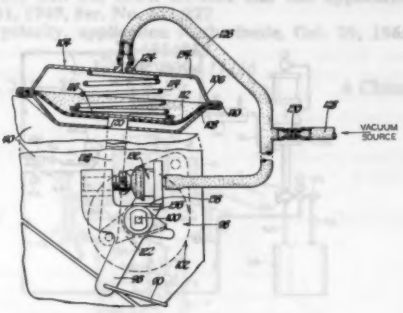
3,720,371

PILOTED SELECTOR ASSEMBLY

Gary E. Richards, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1971, Ser. No. 206,262
Int. Cl. F25b *29/00*
U.S. Cl. 237—2 A **3 Claims**

A piloted mode selector assembly for an automobile air conditioning system for remotely setting a rotary vacuum selector valve by the movement of a dashboard control member. The control member and an air bleed valve of the mode selector are linked by a Bowden type wire. Movement of the Bowden wire corresponding to a new mode setting of the



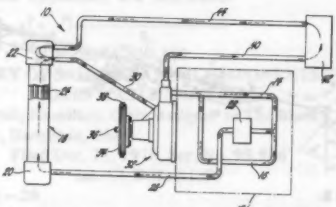
control member opens and closes the air bleed valve which is fluidly connected to a vacuum and spring operated actuator. This varies the vacuum pressure in the actuator which rotates the vacuum selector valve and repositions the air bleed valve so as to maintain the new selector position.

3,720,372

MEANS FOR RAPIDLY HEATING INTERIOR OF A MOTOR VEHICLE

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1971, Ser. No. 206,333
Int. Cl. B60h *1/02*
U.S. Cl. 237—12.3 B **3 Claims**



A heating system for an automobile passenger compartment which includes a turbine type coolant pump driven by the automobile engine to warm engine coolant and pump it through a heater in the passenger compartment. The turbine pump has a housing which defines an annular fluid passage between the pump inlet and pump outlet. Turbine buckets formed along the peripheral edge of a rotatable impeller within the pump housing move through the annular channel to heat coolant therein by means of impact of the turbine buckets upon the coolant.

3,720,373

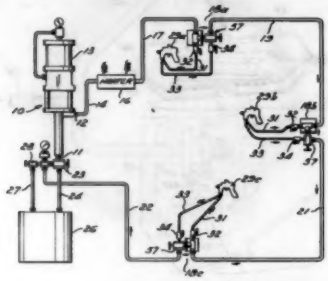
RECIRCULATING PAINT SYSTEM OR THE LIKE

Gustave S. Levey, Houston, Tex., assignor to Gustave S. Levey, trustee, Houston, Tex.

Filed Aug. 30, 1971, Ser. No. 176,226
Int. Cl. B05b *9/00*
U.S. Cl. 239—127 **15 Claims**

A recirculating pressure system for supplying a plurality of spray guns or the like is disclosed. A single pump supplies pressurized liquid to one end of a single recirculating loop, and the recirculating liquid, after passing through the loop, returns to the pump intake. A plurality of spraying stations are

located in the loop and are connected in series. Each spraying station includes an adjustable automatic flow restriction which operates to produce a pressure drop at the associated station. A spray gun is connected to the loop at each station in parallel with the associated flow restriction. The supply line is connected upstream from the flow restriction, and the return line is connected downstream thereof. The flow restrictions function to produce sufficient-pressure drop to insure recirculating flow to the associated gun while permitting a major portion of the liquid to bypass the associated gun.

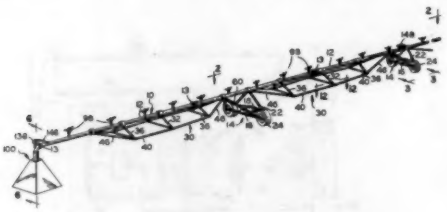


3,720,374

IRRIGATION LINE MOVE

Warren N. Ross, 2123 N. First St., Hermiston, Oreg.

Continuation of Ser. No. 836,739, June 26, 1969, abandoned.
This application Feb. 25, 1971, Ser. No. 119,025
Int. Cl. B05b *3/00*
U.S. Cl. 239—177 13 Claims



An irrigation line move has a pipe supported by carriages with flexible, tapered trusses below the pipe extending between the carriages with the central portions of the trusses rotatable on and slidable along the pipe. Control boxes over the carriages mount switches which are actuated by bars attached to the pipe to stop the carriages when excessive misalignment is approached. A center pivot water supply device has a flushing exit, and a slip ring connector for electrical power to electric motor drives of the carriages. The carriages have adjustable wheel supports to provide toe-in.

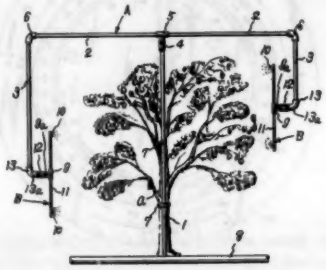
3,720,375

AUTOMATIC SPRINKLING APPARATUS

Hiromu Kumaoka, 227 Tokuda, Kibi-cho, Arita-gun, Wakayama-ken, Japan

Filed Apr. 23, 1971, Ser. No. 136,893
Int. Cl. B05b *3/00*
U.S. Cl. 239—210 2 Claims

An apparatus comprising a vertical tube connected at its lower end to a source for supplying a liquid to be sprinkled, at least one horizontal tube connected to the upper end of the vertical tube and adapted to be rotated about the axis of the vertical tube so as to conduct the liquid from the vertical tube in a horizontal direction, at least one downward tube connected to the distal end of the horizontal tube for conducting the liquid downward and jet means mounted on the lower end of the downward tube for forcing out the liquid from the downward tube while being automatically rotated or pivotally moved by the energy of the discharged liquid and causing the reaction force of the discharged liquid to act on the horizontal tube as a torque therefor. The jets of liquid are sent out from the apparatus in highly three-dimensional manner for uniform application of the liquid to fruit trees.

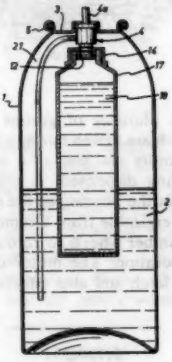


3,720,376

METHOD OF ATTACHING INNERMOST OF TWO CONTAINERS TO A DISPENSING VALVE CARRIED BY THE OUTERMOST CONTAINER

Bruno P. Morane, and Pierre E. Alexandre, both of Paris, France, assignors to L'Oreal, Paris, France

Filed June 18, 1971, Ser. No. 154,417
Claims priority, application France, June 24, 1970, 7023382
Int. Cl. A62c *13/34*
U.S. Cl. 239—308 9 Claims



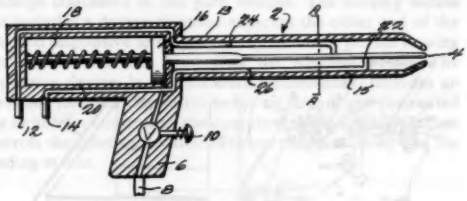
Valve in outer jacket carries depending cup having bottom with annular projection and lateral projection on its side walls. This cup is ultrasonically welded to a connecting member having an annular seat into which the neck of the inner container is screwed and cemented.

3,720,377

SPRAY GUN

Milburn L. Hart, Tulsa, Okla., and Kerwin E. Meinert, Kansas City, Mo., assignors to Cook Paint & Varnish Company, Kansas City, Mo.

Filed Aug. 26, 1971, Ser. No. 175,161
Int. Cl. B05b 7/14
U.S. Cl. 239—336 2 Claims



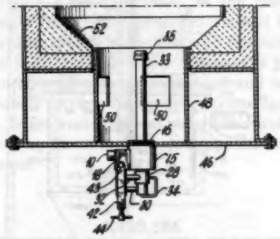
A foam spray gun comprising a mixing chamber, means for supplying foam-forming components to the chamber and a discharge end for discharging a blend of foam-forming components, a fiber chopper mounted on the gun, adjacent the discharge end thereof, the chopper including an inlet for fibers and a downwardly opening discharge for chopped fibers, a cap member attached to the discharge end and forming an annular, cone-shaped passage around the discharge end, the passage being adapted to receive chopped fibers discharged from the chopper, and means for supplying air into the passage at a point beneath the discharge of fibers thereinto whereby the fibers are introduced essentially annularly into the foam-forming components.

3,720,378

QUICK CHANGE MULTI-FUEL BURNER FEED ASSEMBLY

Lester W. Davis, Jr., Dover, N.J., assignor to Esso Research and Engineering Company

Filed April 2, 1971, Ser. No. 130,670
Int. Cl. A62c 31/02
U.S. Cl. 239—397 4 Claims



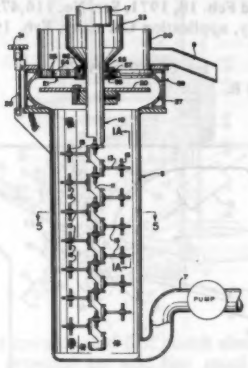
A quick change multi-fuel burner feed assembly comprising a manifold and adapters which permit a rapid change of fuels. The manifold is connected permanently to the burner and to the fuel and utility supplies while the adapters engage with the manifold to permit rapid change of fuel guns.

3,720,379

TREATMENT OF DISPERSIONS

Andrew Szegvari, 201 Castle Blvd., Akron, Ohio 44313

Application Jan. 19, 1966, Ser. No. 534,934, which is a continuation-in-part of abandoned application Ser. No. 407,716, Oct. 30, 1964. Divided and this application Jan. 31, 1969, Ser. No. 871,227
Claims priority, application Netherlands, Oct. 29, 1965, 6514055
Int. Cl. B02c 17/16
U.S. Cl. 241—20 6 Claims



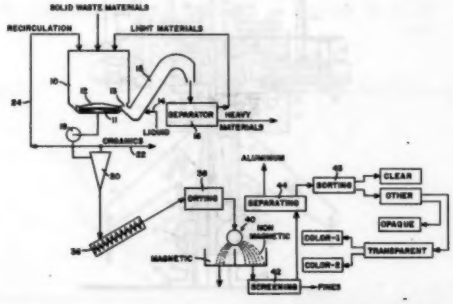
Material is ground to a fine slurry in a liquid by kinetically activated grinding media. The liquid flows up through the vessel containing the grinding media and then through a screen at the top. The invention relates to preventing the grinding media from collecting on the surface of the screen which separates the grinding media from the slurry of ground material. Different embodiments of the apparatus are disclosed.

3,720,380

RECOVERY OF SALVAGEABLE COMPONENTS FROM SOLID WASTE MATERIAL

Paul G. Marsh, Hamilton, Ohio, assignor to The Black Clawson Company, Hamilton, Ohio

Filed Dec. 21, 1970, Ser. No. 99,986
Int. Cl. B02c 21/00
U.S. Cl. 241—20 8 Claims



Glass and aluminum are recovered from a mixture of solid waste, such as municipal waste, by reducing the frangible portions of the waste to a size less than a preselected maximum size, centrifugally treating the reduced portions to divide the

glass, aluminum and other inorganics from the fibrous and other organic components, separating the aluminum from the glass and other inorganics, and segregating the colorless glass from the remaining, relatively opaque inorganics.

3,720,381

CENTERLESS WINDING OF A ROLL OF FOIL

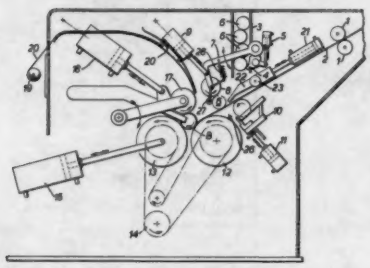
Hans Rehme, Kirchdorf; Manfred Dienst, Misburg, and Horst Muller, Hannover, all of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Germany

Filed Feb. 18, 1971, Ser. No. 116,475

Claims priority, application Germany, Feb. 19, 1970, P 20 07 543.8

Int. Cl. B65h *19/26*

U.S. Cl. 242—56 R 2 Claims



Apparatus for the centerless winding of a roll of foil comprises a pressure roller which urges a core and the foil against a rotating contact roller to cause preliminary winding of the foil on the core. The partially wound core is then transferred to a final winding position for completion of the winding followed by wrapping.

3,720,382

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF SYNTHETIC THREADS

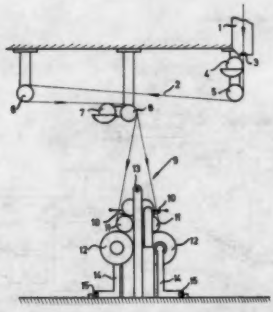
Karl Lehner, Essen, Germany, assignor to Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen, Frankfurt am Main, Germany

Filed Aug. 19, 1970, Ser. No. 65,007

Claims priority, application Germany, Aug. 28, 1969, P 19 43 658.9

Int. Cl. B65h *54/02, 57/00;* D01d *11/04*

U.S. Cl. 242—35.5 R 11 Claims



A process for the continuous production of a large number of synthetic threads wherein the thread path after leaving the spinning shaft up to the preparation godet extends horizontally. Moreover, the thread path from the moistening godet to the winding spool preferably extends more than five meters. Apparatus for carrying out the process is also described.

3,720,383

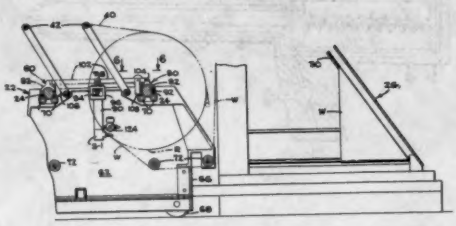
TIMED SUPPLY ROLL BRAKING

Donald C. Crawford, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 18, 1971, Ser. No. 116,324

Int. Cl. B65h *25/22, 25/04*

U.S. Cl. 242—75.44 9 Claims



Apparatus for controlling the web tension in an intermittent motion web handling machine, and including a timed-controlled brake for the web supply roll to prevent inertia override of the supply roll when the web demand ceases during a temporary interruption of the operating cycle or when the machine is shut down. Web tension between web draw rolls and the supply roll is controlled during machine operation by a supply roll drag brake system. A dancer roll assembly regulates the speed of the web draw rolls, and also serves to accumulate and pay out the web according to web demand at a downstream processing station where the web is intermittently driven. The timed braking action is provided to assure that the web accumulated during cycle interruption or shutdown is sufficiently tensioned to enable a normal resumption of the production cycle.

3,720,384

YARN CONTROL DEVICE

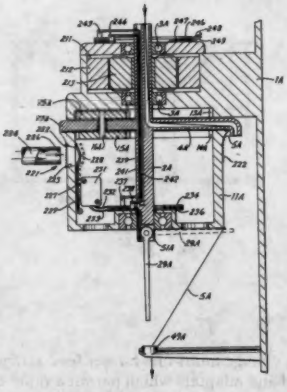
Karl Isac Rosen, Villa Haga, Ulricehamn, Sweden

Continuation-in-part of Ser. No. 734,956, June 6, 1968, abandoned. This application May 27, 1971, Ser. No. 147,587

Claims priority, application Sweden, Oct. 20, 1967, 14374/67

Int. Cl. B65h *51/02*

U.S. Cl. 242—47.01 9 Claims



A yarn feeder having a slotted spool body on which yarn is wound for forming a yarn reserve. Winding means associated

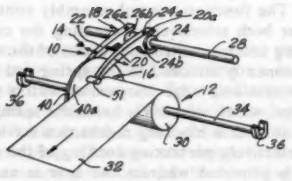
with the spool body selectively permits further windings of yarn to be wound onto said spool body. The yarn feeder includes sensing means associated with the yarn reserve and the slots for causing further yarn windings to be wound on the spool body whenever the yarn reserve falls below a predetermined minimum size. The sensing means includes a nozzle disposed adjacent the spool body for directing an air stream through the slots, which slots are partially covered by the windings of the yarn reserve so that the magnitude of the air stream passing through the slots is related to the number of windings contained in the yarn reserve. The sensing means also includes a device disposed adjacent the other end of the slots and responsive to the magnitude of the air stream flowing through the slots for controlling the winding means. The responsive device, in the disclosed embodiment, includes an operating member responsive to the air stream and connected to a switch for controlling the operation thereof, which in turn controls the relative rotation between the spool body and the winding means.

3,720,385

CONSTANT TENSION WINDING APPARATUS

Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Nov. 9, 1970, Ser. No. 87,797
Int. Cl. B65h *25/28*
U.S. Cl. 242—75.45 **3 Claims**



A simple, inexpensive, all-mechanical apparatus which provides a varying force relationship on a roll means that automatically and exactly compensates for the depletion or increase of the material wound on a roll comprises a web roll means, a web tensioning means for applying tension to the web, and a sensing means coupled with the web tensioning means on a movable follower arm means. The web tensioning means includes a brake disc and a brake means contacting the disc and applying a braking force to the disc at a point generally along a radius thereof as determined by the movement of the sensing means in contact with the outer peripheral surface of the roll. The follower arm means is generally tangentially oriented with respect to the roll and is arranged so the brake friction moves the sensing means against the roll outer surface. In the embodiments shown the brake means and sensing means may be on the same or opposite ends of the follower arm means.

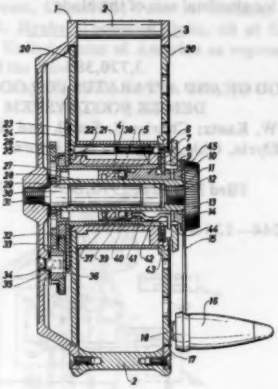
3,720,386

FISHING REEL WITH CLUTCH

Bengt O. J. S. Morner, Ryetvagen 9, Hovas, Sweden

Filed May 26, 1970, Ser. No. 40,637
Int. Cl. A01k *89/02*
U.S. Cl. 242—217 **4 Claims**

The present invention relates to a fishing reel comprising a frame, a drive shaft rotatably journalled in said frame, a crank for rotating said drive shaft, a line spool rotatably journalled in said frame and for receiving a line to be wound up in a predetermined direction, a drag clutch providing drive connection between said drive shaft and said line spool, said drag clutch comprising a first clutch element in driving connection with said drive shaft, a second clutch element in driving connection with said drive shaft and axially displaceable relative to the first clutch element, spring means for forcing said second



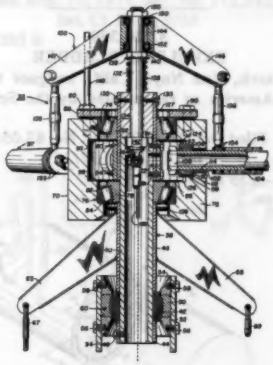
clutch element towards said first clutch element, and friction surfaces provided on said line spool between said first and second clutch elements, means provided for displacing said displaceable second clutch element against the action of said spring means when the drive shaft rotates in a direction opposite to the predetermined direction in which the line is wound up.

3,720,387

ROTARY WING SYSTEM

Robert E. Foote, Lake Dallas, Tex., assignor to Viking Aircraft Corporation, Irving, Tex.

Division of Ser. No. 776,111, Nov. 15, 1968, Pat. No. 3,556,674, which is a continuation-in-part of Ser. No. 578,695, Sept. 12, 1966, abandoned. This application Aug. 28, 1970, Ser. No. 67,701
Int. Cl. B64c *27/52*
U.S. Cl. 244—17.25 **13 Claims**



A rotary wing system for aircraft which comprises a rotatably mounted hub, and a plurality of blades each connected to the hub for rotation therewith by a respective ball joint to permit movement about three coordinate axes including the longitudinal axis of the blade. Blade pitch control means rotatable with the hub is connected to the blades to

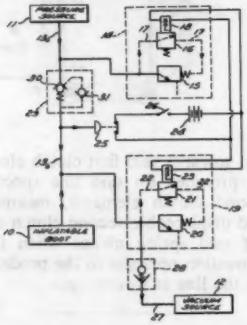
hold each blade in predetermined position with respect to its longitudinal axis as the blades are rotated. The blade pitch control means is longitudinally spaced from the hub and mounted for reciprocable movement in a plane parallel to the longitudinal axis of the hub. The blade pitch control means includes a linkage connected to each blade at a point spaced from the blade's ball joint connection to the hub and spaced from the longitudinal axis of the blade.

3,720,388

METHOD OF AND APPARATUS FOR CONTROLLING A DEICER BOOT SYSTEM

Herbert W. Kaatz; Charles B. Small, and Arthur G. Branch, all of Elyria, Ohio, assignors to Airborne Mfg. Co., Elyria, Ohio

Filed March 6, 1970, Ser. No. 17,129
Int. Cl. B64d *15/18*
U.S. Cl. 244—134 A **14 Claims**



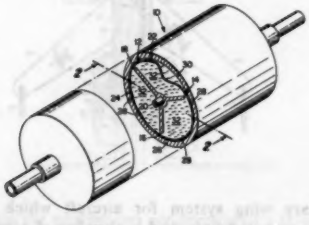
A method of and apparatus for controlling an inflatable aircraft deicer boot and a boot system. A principal feature involves inflating the boot until a predetermined boot pressure is reached normally independently of the time required. Pneumatic control apparatus disclosed involves self-energizing, fast-acting valves adapted to be controlled by electrically actuated means. The method and apparatus of the invention disclosed are suitable for use in connection with conventional deicer boots and engine-driven pressure and vacuum sources.

3,720,389

EXPULSION BLADDER

Delacy F. Ferris, Van Nuys, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 22, 1970, Ser. No. 83,056
Int. Cl. B64d *37/24*
U.S. Cl. 244—135 B **3 Claims**



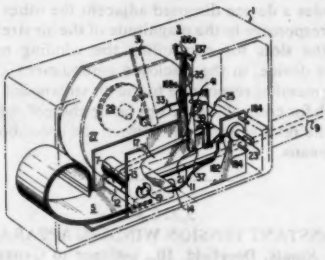
A missile fuel tank having a three lobed bladder supported by an internal structural framework with two lobes of the bladder bonded to the fuel tank wall. This arrangement prevents flexing of the bladder upon acceleration of the vehicle and aids in maintaining missile stability.

3,720,390

PARACHUTE RELEASE DEVICE AND METHOD

Arthur R. Kurle, McLean, Va., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 12, 1971, Ser. No. 114,896
Int. Cl. B64d *17/54*
U.S. Cl. 244—149 **24 Claims**



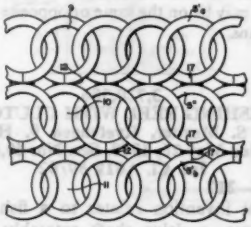
A parachute release device with a delayed releasing means for selectively providing a release initiating stroke through a substantially constant force power spring acting on a parachute ripcord. A housing contains a function control assembly for providing various release initiating conditions, the control assembly allowing the cocking of the power spring provided the delayed releasing means is preset to its proper condition. The function control assembly contains two cam sections for both selectively preventing the cocking of the power spring and for controlling release of the spring. A slide block permanently attached to the spring and having a cam engageable retaining edge cooperates with a sear having a locking edge, which selectively holds the spring in a cocked position, and with a blocking mechanism having a blocking edge for selectively preventing cocking of the spring. A safe condition is provided wherein the sear is cammed into a locked condition to prevent release regardless of the position of the delayed releasing means. An additional safety feature comprising a pull-pin assembly is provided to selectively stop the operation of the delayed releasing means, at the option of the parachutist. The entire assembly is mounted on the parachutist's harness with its operating end being connected to the parachute ripcord.

3,720,391

BAND OF PARALLEL, OPPOSITELY CURBED CHAINS SOLDERED TOGETHER AT THE LINK SOLDER JOINTS

Hans Gustav Erik Wahlbeck, Stallarholmen, Sweden, assignor to Firma Erik H. Wahlbeck, Stallarholmen, Sweden

Filed June 15, 1971, Ser. No. 153,351
Claims priority, application Sweden, June 15, 1970, 8275/70
Int. Cl. B21f *31/00*
U.S. Cl. 245—4 **3 Claims**



Bracelets, necklaces, etc., are composed of rows of flattened link chains adjacent to each other in parallel formation,

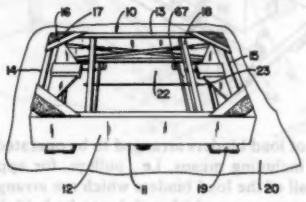
adjacent links of adjacent chains being soldered together at their abutting edges, the links of each chain being screwed, or curbed in opposite directions relative to the links of each adjacent chain such that the adjacent circumferential portions in the abutting edge areas of soldered links in adjacent chains are of corresponding screw bends relative to the plane of the band, the links contained in the chains being formed of bent pieces of wire the ends of which are soldered together to form closed links, the soldered end joints in each of said links being located adjacent the link of an adjacent chain such that the soldered end joint of each link is within a soldered connection between adjacent links of adjacent chains.

3,720,392

VIBRATION-DAMPENING DEVICE FOR A FLOOR-MOUNTED VIBRATING MECHANISM

Carl J. Kulander, P.O. Box 2144, Concord, Calif. 94521

Filed Apr. 30, 1971, Ser. No. 138,958
Int. Cl. F16f *15/06*
U.S. Cl. 248—20 **10 Claims**



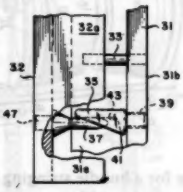
A vibration-dampening device for a floor-mounted vibrating mechanism is provided including an outer frame member adapted to rest on the floor and support the vibrating mechanism thereon. The device includes an inner leveling vibration and impact shock-absorbing mechanism for absorbing vibration and impact on the frame member. Means are provided for transmitting vibration from the vibrating mechanism mounted on the frame member to the shock-absorbing mechanism.

3,720,393

ENERGY ABSORBER FOR ARRESTING MOVEMENT OF LOADS

John P. Hanlon, Jr., Scott Road, Concordville, Pa.

Filed July 7, 1971, Ser. No. 160,350
Int. Cl. B45j *1/22*
U.S. Cl. 248—361 A **8 Claims**



The device is designed to provide a hold down for cargo, seats, vehicle components, and the like subject to inertial forces due to sudden changes in velocity of the vehicle in which the cargo, etc., is being transported; parallel rails define a tie down attaching cargo, seat, vehicle body or the like, to the basic structure; the rails being secured in relative positions by shear pins or rail anchors permitting relative movement within specified limits. Upon a sudden velocity change of the carrier, for example in a crash, the inertia of the load creates a force vector which moves one rail with respect to the other, when this occurs the movement of the rails is arrested by a deformable energy absorbing cup and pin structure to a predetermined limit after.

3,720,394

REDEYE MISSLE GUNNER STANCHION

Frederick B. Barrett, Camarillo; Peter A. Nielsen, Ventura, and Delmer W. Hrabe, Thousand Oaks, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 24, 1971, Ser. No. 146,259
Int. Cl. A47g *29/00*
U.S. Cl. 248—125 **3 Claims**

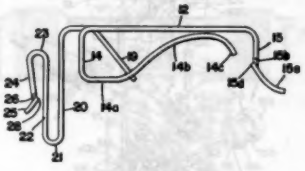
A rotatable gunner's support including a pedestal mounted on a ship's deck and having an upright bearing from which extends an offset vertical standard. A back rest is connected to the upper end of the standard and is equipped with a safety belt.

3,720,395

CLIP FOR SECURING CONDUIT BOXES TO METAL DRY WALL STUDS

Jerome T. Schuplin, Parma Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio

Filed Aug. 18, 1971, Ser. No. 172,842
Int. Cl. H02g *3/08*
U.S. Cl. 248—205 R **12 Claims**



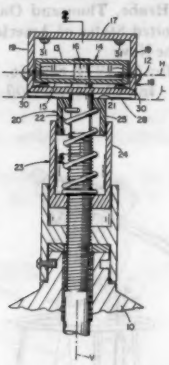
A one-piece clip is provided which can be quickly and easily secured to the flange of a channel stud and to a conduit box without the aid of fastening means other than that which is an integral part of the clip. The clip has incorporated therein means for compensating for dimensional differences in parts of the stud, and barb-like means for engaging the web of the stud and the side walls of the conduit box to aid in preventing displacement of the clip relatively to the stud and box.

3,720,396

TILT MECHANISM FOR CHAIRS OR THE LIKE

Roy O. Gilbert, Gardner, Mass., assignor to Collier-Keyworth Company, Gardner, Mass.

Filed Sept. 27, 1971, Ser. No. 183,976
Int. Cl. A47c *3/026*
U.S. Cl. 248—378 7 Claims



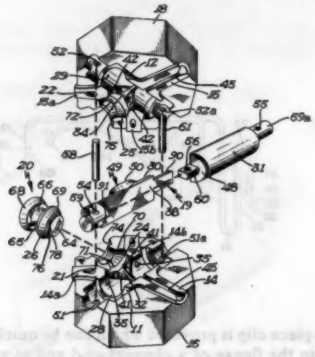
A tilt mechanism for a chair or the like including an upright spindle having a headpiece and a supporting member surrounding the headpiece, pivotally mounted thereon for rearward rocking movement. The bottom of the supporting member has a curved cam surface and there is provided a nylon operating member axially slideable on the spindle and having a generally flat upper cam surface in contact with the curved cam surface of the supporting member. A bushing is threadably mounted on the spindle below the operating member for adjustable movement therealong and a compression spring surrounds the spindle interposed between the bushing and the operating member urging the supporting member into its normal position.

3,720,397

MOLDING STRUCTURE FOR CASTING ARTICLES HAVING A NEGATIVE DRAFT PORTION

Lawrence R. Voegele, Owatonna, Minn., assignor to Jostens, Inc., Owatonna, Minn.

Filed Mar. 1, 1971, Ser. No. 122,623
Int. Cl. B22c *9/24*
U.S. Cl. 249—57 4 Claims



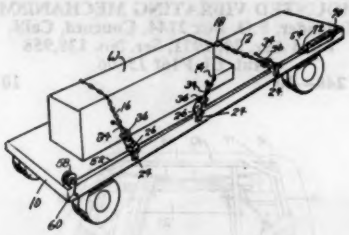
An improved molding structure which includes a molding surface comprised partially of a rigid material and partially of a flexible, resilient material, facilitating the molding of articles having surfaces with a negative draft and the removal of the same from said molding structure without the destruction or permanent distortion of either the article molded or the molding structure which utilizes the desired characteristics of both a rigid material and a flexible material mold.

3,720,398

UNIFORM TENSION LOAD BINDER

Frederick G. J. Grise, West Brookfield, Mass., assignor to Pioneer Coveralls, Inc., North Oxford, Mass.

Filed April 15, 1971, Ser. No. 134,385
Int. Cl. B66f *1/00*; B66d *1/00*
U.S. Cl. 254—51 9 Claims



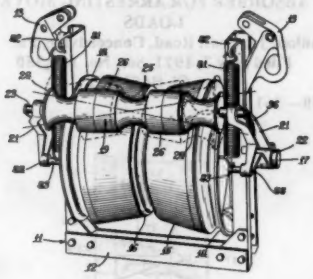
A series of load binders arranged to be operated by a single cable and including means, i.e., pulleys, for applying equal tension to all of the load binders which are arranged in series along a support upon which articles to be held down are arranged.

3,720,399

GROUNDING DEVICE FOR BUNDLE CONDUCTOR STRINGING BLOCKS

Hoyt W. Bozeman, Jr., Chattanooga, Tenn., assignor to Sherman & Reilly, Inc., Chattanooga, Tenn.

Filed Oct. 27, 1970, Ser. No. 84,372
Int. Cl. B24b *5/00*
U.S. Cl. 254—134.3 PA 5 Claims



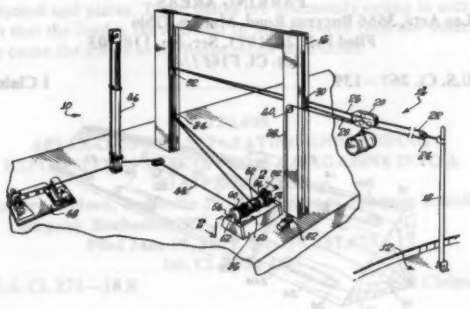
Grounding device for a bundle stringing block having a plurality of coaxial sheaves rotatably supported by a frame which comprises a metal grounding roller spaced from the periphery and aligned with each sheave, a laterally extending shaft rotatably supporting the grounding rollers, an arm articulately connected with each end of the roller shaft and pivoted on the frame coaxially with the sheaves, springs connected at their upper ends to the frame and at their lower ends to each arm at a point between its pivot and the roller shaft and offset downwardly to provide a moment arm about the roller arm pivot variable in length in response to roller arm movement to maintain substantially constant the lifting force on each grounding roller despite relative variations in conductor ten-

sions, and means for electrically connecting a roller arm with the roller shaft.

3,720,400
CABLE DRUM GEAR APPARATUS

Harold L. Potts, Toronto, Ontario, Canada, assignor to The Garrett Corp., Los Angeles, Calif.

Filed Nov. 25, 1970, Ser. No. 92,739
Int. Cl. B66d *1/48*
U.S. Cl. 254—172 9 Claims

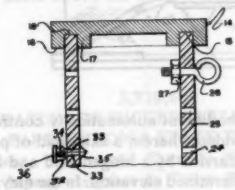


A self-propelled load-carrying vehicle traverses between supply and receiving vessels at sea, on a closed loop highline of two cable whips terminating at one of the vessels on a pair of drums mechanically interconnected by a differential gear assembly whose spider is coupled to a third drum having a cable coupled to a ram tensioner. In one vehicle docking mode rotation of one of the drums may be restrained by a brake mechanism, leaving the other drum to take in or pay out its cable whip in accordance with relative motion between the two vessels. In a second docking mode both drums take in or pay out both cable whips equally in accordance with relative motion between the two vessels.

3,720,401
PLASTIC FENCE POST

George N. Loch, Box 14, Glendon, Alberta, and Alphonse Loch, R.R. 2, Tofield, Alberta, both of Canada

Filed Dec. 29, 1970, Ser. No. 102,358
Int. Cl. E04h *17/24*
U.S. Cl. 256—19 1 Claim

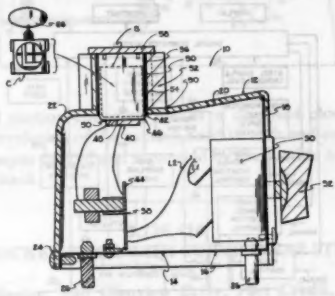


A hollow plastic fence post has a detachable steel driving cap and a detachable decorative cap used after driving. Corrugations around the lower end prevent displacement of the post after driving and apertures through the walls permit attachment of wire or wood straps to which fence rails may be nailed.

3,720,402
ULTRASONIC CLEANING DEVICE FOR FRAGILE HEAT-SENSITIVE ARTICLES

Millard M. Cummins; Thomas E. Hankins; Robert Best, and Frederick Biesecker, all of Columbus, Ohio, assignors to Soniclens, Inc., Columbus, Ohio

Filed July 9, 1971, Ser. No. 161,050
Int. Cl. B01f *11/02*; B08b *11/02*
U.S. Cl. 259—72 7 Claims

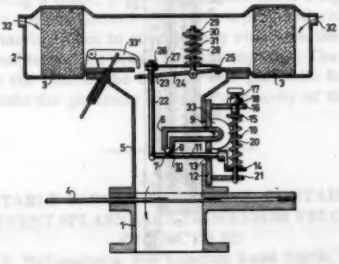


The described device includes a glass receptacle for the articles to be cleaned, e.g. soft contact lenses. A piezoelectric crystal is secured to the bottom of the receptacle. An annular heat sink, e.g. of aluminum, surrounds the receptacle. The circuitry for operating the crystal, and an automatic timer for turning off the device after completion of an established cleaning time are disposed in a housing upon which the receptacle is mounted. The receptacle is normally filled with a cleansing solution such as saline solution, and the articles to be cleaned may be placed in a foraminous container to permit their easy retrieval from the receptacle.

3,720,403
FUEL-INJECTION CARBURETORS HAVING FUEL REGULATOR

Knut Ludvig Winquist and Sture Anders Backman, Orebro, Sweden, assignors to Johan H. Graffman, Villa Solimar, Benicasim, Castellon, Spain

Continuation-in-part of application Ser. No. 615,994, Feb. 14, 1967. This application Feb. 5, 1969, Ser. No. 796,877
Claims priority, application Sweden, July 3, 1968, 9,179/68
Int. Cl. F02m *9/08*
U.S. Cl. 261—50 A 32 Claims



A fuel-injection type carburetor having a fuel injection valve arranged to open relative to the fuel inlet nozzle to a varying extent as a function of the rate of air flow through the carburetor and including flexible guide means for maintaining the valve aligned with the nozzle while permitting it to reciprocate relative thereto.

3,720,404

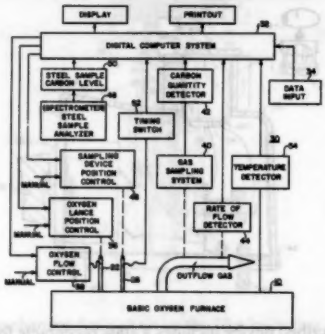
SYSTEM FOR CONTROLLING CARBON REMOVAL IN A BASIC OXYGEN FURNACE

Norman R. Carlson, Export; Richard E. J. Putman, Penn Hills, and James T. Carleton, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 649,236, June 27, 1967, Pat. No. 3,565,606. This application Dec. 22, 1970, Ser. No. 100,666

Int. Cl. C21c 5/30

U.S. Cl. 266—34 R 2 Claims



Both low and high carbon steels are produced in a basic oxygen furnace controlled by a system which employs a direct sampler operated at an adequately early predetermined time during the oxygen blow. Endpoint carbon level is controlled as a result of calculations made from the sample carbon level and waste gas measurements of post sample time carbon removal. The carbon control is made compatible with other endpoint controls.

3,720,405

HYDRO-PNEUMATIC SPRING

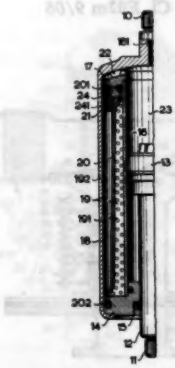
Manfred Lohr, Letmathe, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed Feb. 24, 1971, Ser. No. 118,301

Claims priority, application Germany, March 5, 1970, P 20 10 339.3

Int. Cl. F16f 9/10

U.S. Cl. 267—64 R 9 Claims



A hydro-pneumatic spring for use in automobiles has an internal chamber one end of which is open. A cover closes the open end and an annular supporting element is accommodated in the chamber at the other end. A tubular flexible divider is accommodated in the chamber extending longitudinally thereof and having a smaller diameter than the chamber to subdivide the same into an inner and an outer compartment. Mounting beads at opposite ends of the flexible divider are connected to the inner side of the annular supporting element and to the cover, respectively. A piston is displaceably accommodated in the inner compartment and an annular supporting ring of synthetic plastic material is accommodated between the annular supporting element and the inner surface bounding the chamber and projects in part axially beyond the annular supporting element in the direction towards the cover.

3,720,406

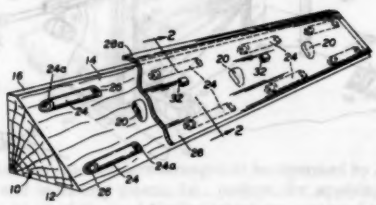
SHOCK-ABSORBING ABUTMENT BLOCK FOR VEHICLE PARKING AREAS

Leo Artz, 3666 Bucyrus Road, Marion, Ohio

Filed Feb. 24, 1971, Ser. No. 118,403

Int. Cl. F16f 1/42

U.S. Cl. 267—139 1 Claim



An impact-cushioning, wheel abutment block for vehicle parking areas which includes a wood base member formed with an oblique surface inclined to face upwardly toward the wheels of a parked vehicle and rigidly anchored to the parking surface with spikes extending obliquely through the base member in the general direction of wheel impact force vectors, the base member being provided on its oblique surface with resiliently displaceable impact-cushioning means.

3,720,407

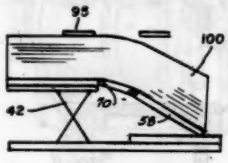
AUTOMATIC SHEET WINDING APPARATUS AND METHOD OF WINDING A SKID OF SHEET MATERIAL

Cyril H. T. Woodward, 160 Howard Avenue, Rochelle Park, N.J.

Filed Dec. 30, 1971, Ser. No. 213,877

Int. Cl. B65h 3/62

U.S. Cl. 271—18 R 15 Claims



In a preferred embodiment automatically controlled winding apparatus is provided wherein a skid load of paper, cardboard or the like is carried by a hinged skid and is raised by two lift tables to a determined elevation. In the elevated condition a pair of pressure pads is moved downwardly to clamp the load of sheets to the skid. After the load has been brought to a clamped condition the winding of he load is accomplished by bowing the sheets then realigning them. In the apparatus using two lift tables, the winding operation includes the following steps; elevating the skid load by means of the lift tables to an elevated condition; clamping this load to the hinged skid; lowering a first lift table to its lowest condition so that at least one-half of the skid load of sheet material is caused to drop

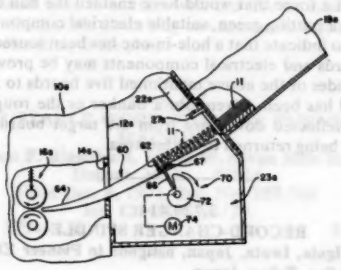
downwardly transcribing an arc while the lesser portion of the skid load remains in a clamped elevated condition; again raising the lowered skid portion to its elevated clamped condition; lowering the second or other one-half of the skid load is caused to drop downwardly transcribing an arc like the other just winded portion of the skid which remains in a clamped elevated condition; again raising this lowered skid portion to its elevated condition and then lowering both lift tables, the supported hinged skid and the load of paper to a lowered condition whereat said skid load of sheet material is removed from the winding apparatus. In an alternate embodiment three lift tables are used with a like-mannered hinged skid. The skid and load are alternately raised by their ends and then at their middle portion to wind the sheets by alternate bowing. In yet another embodiment a skid load of paper is engaged by pivoted end plates. These plates are alternately swung in arcs so that the load is skewed first to one side and then the other to cause the sheets to be displaced on each other.

3,720,408

APPARATUS FOR SEPARATING AND FEEDING EXPOSED FILM SHEETS FROM A MAGAZINE INTO A FILM PROCESSOR

Robert F. Horn, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 10, 1971, Ser. No. 151,675
Int. Cl. B65h *3/00*
U.S. Cl. 271—18 R **8 Claims**



Apparatus for separating and singly delivering exposed film sheets from a film magazine into a film processor includes means for coupling the film magazine to the processor in a substantially light-proof manner, a guide for feeding the film sheets from the film magazine along a predetermined path to the processor, an abutment disposed to be engaged by the bottommost sheet of film while allowing the top sheet to move toward the processor, and a lift member for raising the engaged film sheet above the abutment for gravity feed to the processor.

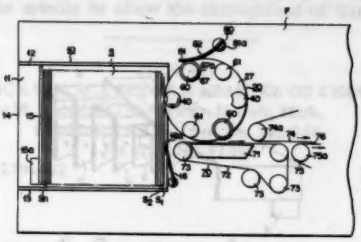
3,720,409

APPARATUS FOR SUCCESSIVELY TAKING OUT PAPERS FROM A STACK THEREOF

Mitsuo Kubo, Tokyo, and Shunichi Nakajima, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed April 7, 1971, Ser. No. 132,079
Int. Cl. B65h *3/08*
U.S. Cl. 271—29 **17 Claims**

Sheet feeding apparatus comprises paper supply means including means for progressively advancing a stack of papers, a rotary member positioned on the output side of the paper supply means, and a suction head supported by the rotary member so as to be rotatable about its own axis and to rotate about the axis of the rotary member in response to the rotation of the rotary member. The suction head has a vacuum suction port to suck and separate the foremost sheet of paper from the



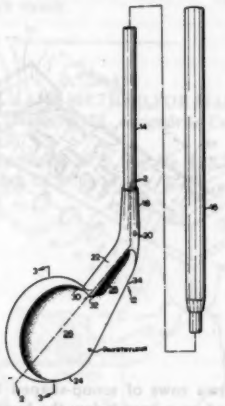
stack and suction conveyor means is disposed close to the locus of revolution of the suction head to suck and convey the sheet of paper sucked and separated by the suction head away from the stack.

3,720,410

BALL HOCKEY STICK WITH CURVILINEAR STRIKING FACES

Andrew Saytar, 140 Glenview Drive, Port Credit, Ontario, Canada

Continuation-in-part of Ser. No. 810,177, March 25, 1969, abandoned. This application Jan. 4, 1971, Ser. No. 103,927
Int. Cl. A63b *59/12*
U.S. Cl. 273—67 A **5 Claims**



The ball hockey stick of this invention includes an elongate shaft having a blade, preferably molded from a rigid plastic, affixed at one end thereof. The blade is provided with concave ball-contacting faces to substantially eliminate the tendency for the ball to bounce or roll over the top edge. The concavity adjacent the heel of the blade is of a parabolic form which merges into the generally spherical concavity of the forward end.

3,720,411

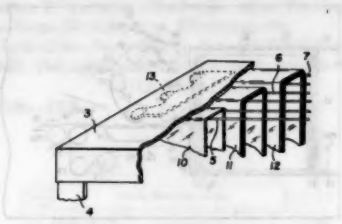
PORTABLE TARGET TO RECEIVE, CONTAIN, AND PREVENT SPLASHBACK OF MEDIUM VELOCITY PROJECTILES

George E. DeVogelaere, 594 Landing Road North, Rochester, N.Y.

Filed March 8, 1971, Ser. No. 122,027
Int. Cl. F41j *1/14*
U.S. Cl. 273—102.4 **3 Claims**

A portable target for receiving and containing projectiles built in a conventional rectangular box shape but substantially

thicker to contain in back of the target image paper, a plurality of penetratable resilient arrestor sheets of sufficient size to fill the target to accept and arrest a projectile entering its open face by penetrating a number of the arrestor sheets without



splashing out of the target. A single arrestor sheet is used between the target paper and the rest of the arrestor sheets to eliminate splash back from the projectile that can either tear the target paper or come out of the target.

3,720,412

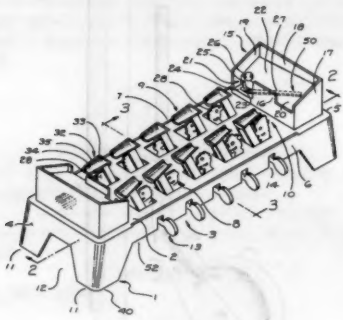
ARTICLE TRANSPORTING GAME APPARATUS

Carlos M. Ramirez, Brooklyn, N.Y., assignor to Steven Manufacturing Company, Hermann, Mo.

Filed April 14, 1971, Ser. No. 133,808

Int. Cl. A63f *9/14*

U.S. Cl. 273—86 R **13 Claims**



A game has two rows of scoop-shaped buckets on arms pivotally mounted on a base below the buckets. Each of the buckets may be rotated manually independently of the others. The arrangement of the bucket in each row and their construction allow an article to be passed to the next adjoining bucket in the row, or, in the case of the last bucket in the row, to a hopper; and the buckets are disposed oppositely in the two rows. A hopper at each end of the base plate receives articles from the last bucket of one row and feeds them to the first bucket of the oppositely directed row.

3,720,413

GAME TARGET

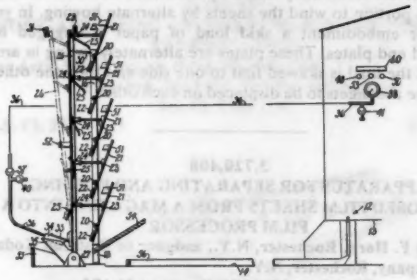
Arthur William Ready, 25 St. Nicholas Grove, Ingrave, Brentwood, England

Filed March 29, 1971, Ser. No. 128,850

Int. Cl. A63b *69/36*

U.S. Cl. 273—182 R **16 Claims**

A forwardly inclined target board is rotationally mounted on each of five horizontally extending pivot shafts which are vertically spaced from each other: Each lower board extends upward to a position forward of the lower portion of the board immediately thereabove. An upright member positioned rearwardly of the target boards is mounted so as to be pivoted rearwardly about a pivot axis at its lower end in response to rearward movement of any of the target boards about its associated pivot shaft. The rearward movement of the upright member actuates a hydraulic system which provides the golfer at the tee area with an indication of the probable distance the ball would have been driven had it not hit one of the target



boards. If a driven ball hits a narrow central zone of any target board with a force that would have enabled the ball to reach the cup in a putting green, suitable electrical components are provided to indicate that a hole-in-one has been scored. Additional boards and electrical components may be provided on opposite sides of the above mentioned five boards to indicate that a ball has been driven into a bunker or the rough. Golf balls are deflected downward from the target boards into a trough for being returned to the tee area.

3,720,414

RECORD-CHANGER SPINDLE

Toyonori Igata, Iwata, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 14, 1971, Ser. No. 207,943

Claims priority, application Japan, Dec. 17, 1970, 45/133340

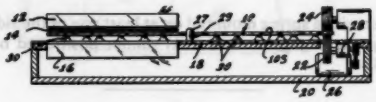
Int. Cl. G11b *17/04*

U.S. Cl. 274—10 S **8 Claims**

A record-changer spindle has a drive shaft which, when moved downward, opens a set of upper pawls to support a plu-

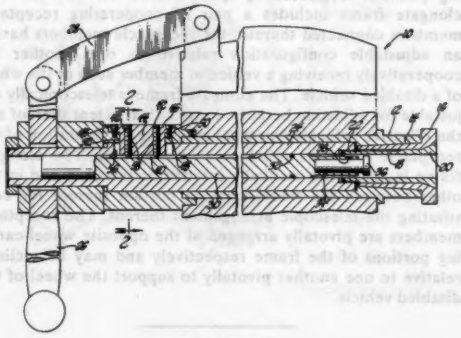
rality of record disks, and when rotated in one direction closes a set of normally open, lower pawls to thereby allow one disk to move downwardly.

3,720,415
DISC DRIVE
Charles J. Daniels, Terminal Island, and Harvey W. La Branche, Palos Verdes Peninsula, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed June 8, 1970, Ser. No. 44,349
Int. Cl. G11b *3/00*
U.S. Cl. 274—39 A **6 Claims**



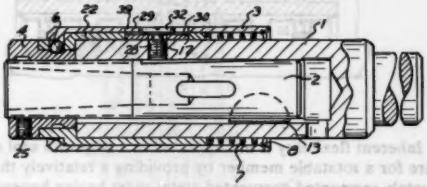
Apparatus for driving optical disc while light passes through it to photocells, in a manner that reduces noise to a minimum, by eliminating the need for a transparent turntable to support the disc. The apparatus includes a stationary plate of electrically conductive material with protuberances thereon which support the disc as it is rotated by a motor, the protuberances having a small area in contact with the disc to minimize the area over which static electricity can accumulate that tends to make the disc stick to the plate.

3,720,416
ADJUSTABLE WORK STOP FOR TURNING MACHINE
Vernon F. Blanchard, 25916 W. Seven Mile Road, Detroit, Mich. 48084
Filed Oct. 8, 1971, Ser. No. 187,709
Int. Cl. B23b *31/20*
U.S. Cl. 279—1 S **6 Claims**



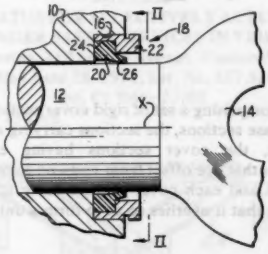
A work stop for the collet of a turning machine takes the form of an elongated rod rotatably supported internally of the draw bar. The rod is fixed to the spindle by three removable keys, retained on an annular housing fixed to the spindle which project inward radially through elongated slots in the draw bar to engage longitudinal keyways formed in a surface of the stop rod. Set screws threaded in the keys bear against the surfaces of the rod so as to fix it with respect to the spindle. The extension of the stop relative to the collet may be adjusted by loosening the set screws and the keys may be removed from the spindle to allow the throughfeed of bar stock.

3,720,417
QUICK CHANGE SPINDLE ADAPTER OR CHUCK
Theodore M. Smith, 14750 Puritan, Detroit, Mich.
Filed July 19, 1971, Ser. No. 163,946
Int. Cl. B23b *31/04*
U.S. Cl. 279—82 **1 Claim**



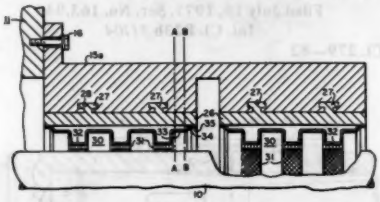
A quick holding chuck, generally according to the device shown in FIGS. 4 and 5 of the U.S. Patent to Bilz No. 3,473,815 of Oct. 21, 1969, but improved in the provision of a spring holding plate between an enlarged head of the side set screw and the chuck shank.

3,720,418
SEAL ASSEMBLY AND METHOD FOR MAKING SAME
Lawrance F. Berg, Lockport, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed March 29, 1971, Ser. No. 128,820
Int. Cl. F16j *15/00, 15/16*
U.S. Cl. 277—9 **8 Claims**



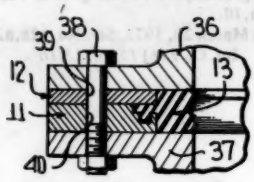
A seal assembly, located in a seat provided in a housing or end cap of a hydraulic motor, for example, comprises an elastomeric seal member and a rigid, ring-like retaining member. The seal assembly serves a wiper function to clean a rod reciprocally movable through a bore in the housing or end cap. The elastomeric member is split in one place for easy placement around the rod and the retaining member is fractured into two or more pieces for easy placement around the elastomeric member and the rod. The retaining member includes means for easy removal of the seal assembly from the housing when it is replaced.

3,720,419
FABRICATED LABYRINTH SEAL STRUCTURE
Richard S. Adelizzi, Marlton, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 21, 1971, Ser. No. 108,428
Int. Cl. F02f 11/00; F01d 11/08
U.S. Cl. 277—53 4 Claims



Inherent flexibility is incorporated in a labyrinth seal structure for a rotatable member by providing a relatively thin arcuately segmented corrugated metal sheet having honeycomb metal seals secured to the ridges of the corrugated metal sheet, thereby precluding the need for the spring-backed grooved seal rings previously utilized in labyrinth seals.

3,720,420
GASKET
Jerry G. Jelinek, Whittier, and Edward Reinsch, Palos Verdes, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed March 19, 1971, Ser. No. 126,192
Int. Cl. F16j 15/00, 15/08, 15/10
U.S. Cl. 277—180 9 Claims



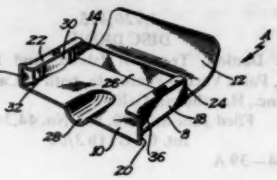
A gasket comprising a set of rigid cover sections overlying a set of rigid base sections, the sections carrying a resilient sealing element, the cover sections having endwise joints therebetween that are offset from endwise joints between the base sections and each cover section being attached to two base sections that it overlies so as to form a unitary gasket assembly.

ERRATA

For Classes 279—1 and 279—82 see:
Patents Nos. 3,720,416 and 3,720,417

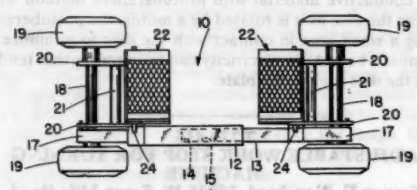
3,720,421
AUXILIARY TIP FOR THE REAR END OF A SKI RUNNER OF A SNOWMOBILE
Michael G. Clemmer, Box 224, Babbitt, Minn.
Filed March 19, 1971, Ser. No. 126,071
Int. Cl. A63c 11/14; B62b 17/00
U.S. Cl. 280—28 2 Claims

An auxiliary tip for the rear end of a ski runner of a snowmobile including a body having a bottom with spaced sidewalls with a flange on each sidewall overlying the bottom and an arcuate upturned end extending from the bottom



together with a spring mounted on at least one of the side walls for gripping engagement of a ski runner positioned between the walls.

3,720,422
MINI-DOLLY FOR TRANSPORTING VEHICLES
Arthur W. Nelson, 180 Bayview Ave., East Islip, N.Y.
Filed Feb. 3, 1971, Ser. No. 112,262
Int. Cl. B62b 11/00
U.S. Cl. 280—35 8 Claims

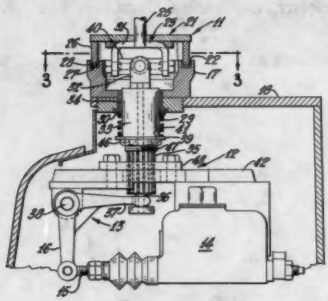


A mini-dolly for transporting vehicles comprising an elongate frame, the latter including a pair of opposite wheel-carrying portions longitudinally spaced from one another. The elongate frame includes a pair of cooperating receptacle members connected thereto, the receptacle members having an adjustable configuration relative to one another for cooperatively receiving a vehicular member such as the wheel of a disabled vehicle. The elongate frame is telescopically adjustable for adjusting both the longitudinal extent thereof and the effective vehicular member receiving configuration of the receptacle members relative to one another. The elongate frame includes two mutually interfitting portions one in the other between the wheel-carrying portion thereof for constituting the telescopic arrangement thereof. The receptacle members are pivotally arranged at the opposite wheel-carrying portions of the frame respectively and may be inclined relative to one another pivotally to support the wheel of the disabled vehicle.

3,720,423
VEHICLE CONTROL MECHANISM
Errick G. Morris, Southampton, Pa., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Mar. 8, 1971, Ser. No. 121,634
Int. Cl. B62d 1/14, 1/18
U.S. Cl. 280—87 A 8 Claims

A brake and steering mechanism for a material handling vehicle which permits actuation of the brake by tilting the steering column of the vehicle. A steering shaft within the steering column effects steering when rotated and braking when tilted by means of a novel universal

joint assembly including a rotatable and tiltable platform supporting the shaft which converts tilting movement of the upper portion of the shaft into axial motion of the



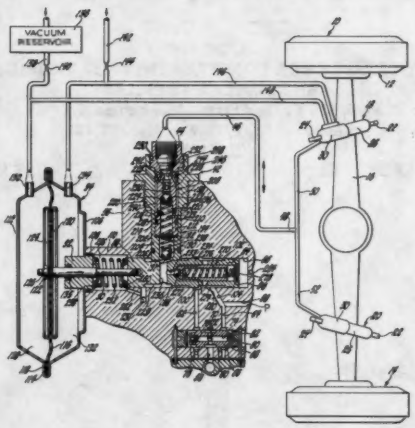
lower portion of the shaft. The brake is actuated through a crank arm assembly by said axial movement of the steering shaft.

3,720,424

VACUUM SERVO VEHICLE LEVELING SYSTEM

Albert R. Tilford, Sterling Heights, Harold E. Boettger, Pontiac, and Ming-Chih Yew, Sterling Heights, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1971, Ser. No. 211,365
Int. Cl. B60g *17/02*
U.S. Cl. 280—124 F **5 Claims**



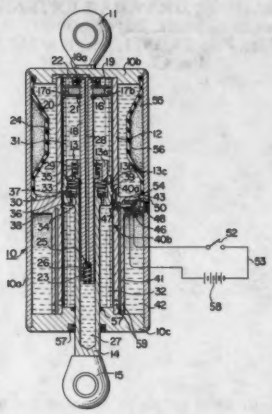
A vehicle leveling system has a vacuum servo operated hydraulic height control valve for automatically leveling a vehicle. The valve fills and exhausts hydraulic leveler units from a central hydraulic system on the vehicle in response to vehicle load changes. Undamped height responsive air bleed valves are positioned by load changes to cause a pressure difference in opposed chambers of the vacuum servo both of which are bled down through a vehicle engine vacuum system.

3,720,425

PROCESS AND APPARATUS FOR THE ADJUSTMENT OF THE HEIGHT OF THE CHASSIS OF A WHEELED VEHICLE

Tadao Asano; Noboru Murakami; Toru Akashi, and Naoji Sakakibara, all of Kariya, Japan, assignors to Aisin Seiku Kabushiki Kaisha, Kariya City, Japan

Filed Aug. 4, 1970, Ser. No. 60,880
Claims priority, application Japan, Aug. 5, 1969, 44/61826; Aug. 6, 1969, 44/62571; Aug. 8, 1969, 44/62993
Int. Cl. B60g *17/00*
U.S. Cl. 280—124 F **16 Claims**



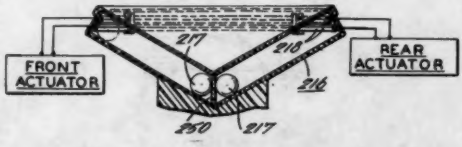
A pneumatic and hydraulic suspension device for vehicles is provided with a working cylinder having a plurality of communication or chassis level adjusting openings extending therethrough at different positions along the length thereof. A piston member is slidably received within the working cylinder to define two variable volume chambers on opposite sides thereof. Valve means are provided for controlling fluid communication between the two chambers the chassis level adjusting openings whereby the chassis height may be selectively adjusted through the automatic or manual control of the valve means.

3,720,426

APPARATUS FOR SELECTIVELY ACTUATING PASSENGER SAFETY DEVICES IN VEHICLES

Harry R. Johnston, 110 Seltzer Avenue, Coatesville, Pa.

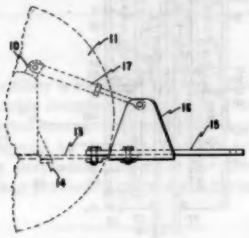
Filed June 28, 1971, Ser. No. 157,569
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **6 Claims**



An automobile having a series of passenger-restraint devices including electrically-actuated inflatable air bags mounted at preselected locations in the passenger compartment is provided with apparatus which operates to actuate selected ones of the restraint-devices in response to front, rear or side collisions. The apparatus comprises an inverted hollow conical housing which contains a free ball and which is divided into quadrants by separate arcuate electrical contacts mounted inside and along the rim of the housing. The contacts

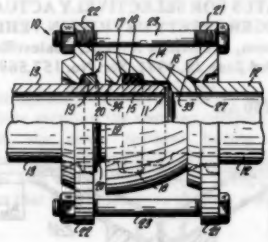
are connected by means of circuits to the restraint devices so that in a collision the ball rolls up the conical wall of the housing and engages the contacts to close the circuits and thereby to actuate the devices. In one embodiment, the housing is divided by a diametrically-extending partition which bisects opposed ones of the contacts and a ball is mounted on each side of the partition so that when the apparatus is mounted in an automobile with the partition extending sideward of the vehicle, each ball is capable of engaging contacts corresponding either to the left or the right and the front or rear bags.

3,720,427
TRACTOR DRAWBAR EXTENSION
Harlan E. Steffe, Boyden, Iowa 51234
Filed July 14, 1971, Ser. No. 162,530
Int. Cl. B60d 1/00
U.S. Cl. 280—405 R **3 Claims**



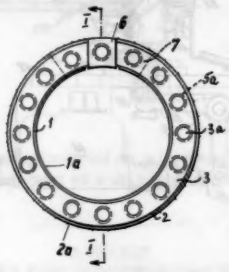
A tractor drawbar extender adapted for use with a lifting hitch and including side members extended upward for attachment to the upper member of the lifting hitch and extended downward to embrace a regular drawbar to hold the extender in alignment.

3,720,428
PIPE COUPLING
Jaroslaw Zastawny, Weston, 626 Ontario, Canada, assignor to Canron Limited, Rexdale, Ontario, Canada
Filed Jan. 25, 1971, Ser. No. 109,384
Int. Cl. F16l 21/02
U.S. Cl. 285—368 **6 Claims**



A pipe coupling to restrain a pipe joint between a bell end type pipe and a spigot end type pipe having stop means close to the end thereof. The coupling includes two interchangeable flanges interconnected and each defining a circular bore therein to define a first and second annular recess. The first annular recess is adapted to bear uniformly on the surface of the pipe bell while the second annular recess is adapted to exert a downward pressure on the pipe stop means. The joint is restrained by adjustable fastening means interconnecting the two flanges in spaced apart relationship over the pipes one on each side of the joint.

3,720,429
COUPLING
Josef Friedrichs, Krefeld-Bockum, Karl Heinrich Schropfer, Krefeld-Urdingen, and Ulrich Kloren, Krefeld, Germany, assignors to Ringfeder G.m.b.H., Krefeld-Urdingen, Germany
Filed Mar. 8, 1971, Ser. No. 121,927
Claims priority, application Germany, Mar. 9, 1970, P 20 11 012.7
Int. Cl. F16d 1/06
U.S. Cl. 287—52.06 **8 Claims**



An outer elastic split ring concentrically and with clearance surrounds an inner elastic split ring. The rings each have an axial gap and the axial gaps are radially aligned with one another. The rings defined with one another two axial clearances which taper in opposite axial directions inwardly towards one another and in each of which an intermediate split ring of wedge-shaped cross-section is received. These split rings can be drawn axially together by suitable bolts which connect them, to thereby radially expand the outer elastic split ring and radially contract the inner elastic split ring. In the radially aligned axial gaps of these four rings there is located a torque-transmitting member which at least substantially fills these gaps and is connected with the remainder of the coupling so as to be retained in its selected position relative thereto.

3,720,430
ADJUSTABLE ROD CONSTRUCTION FOR TROPHIES AND SIMILAR ARTICLES
Peter St. Paul, 530 E. 72nd Street, Manhattan, N.Y.
Filed Dec. 13, 1971, Ser. No. 207,445
Int. Cl. F16b 7/20
U.S. Cl. 287—62 **3 Claims**

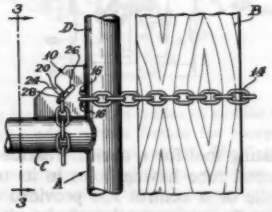
An adjustable length rod construction for assembling trophies from selected interchangeable components, permitting

the use of a single size of rod in conjunction with trophies of varying heights. The rod includes a first member having a hollow bore, an upper end of which is provided with a series of discontinuous oppositely disposed thread segments defining an interstice therebetween, and a second rod member of noncircular cross section corresponding to said interstice, and having corresponding discontinuous threads thereon so as to be longitudinally insertable therein to a degree determining the overall length of the rod, and subsequently rotatable to cause mutual engagement of the thread segments on the first and second rod members, and create a frictionally reached retained adjustment therebetween.

3,720,431
LATCH FOR FARM GATES

Norman J. Oliver; Virgil Hardie, both of Sioux Falls, and Ludwig Camp, Worthing, all of S. Dak., assignors to Sioux Steel Company, Sioux Falls, S. Dak.

Filed June 1, 1971, Ser. No. 148,795
Int. Cl. E05c *17/36*
U.S. Cl. 292—264 **3 Claims**

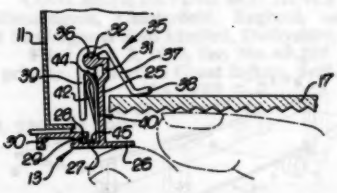


A latch plate, for mounting on the free end of a farm gate or the like, having a slot for the reception of a link of a section of link chain, with the chain surrounding a gate post, for detachably securing the gate in closed position.

3,720,432
LATCH MECHANISM

Morris Chudler, Van Nuys, Calif., assignor to Prudential Lighting Corporation, Los Angeles, Calif.

Filed June 14, 1971, Ser. No. 152,871
Int. Cl. E05c *3/08*
U.S. Cl. 292—220 **6 Claims**

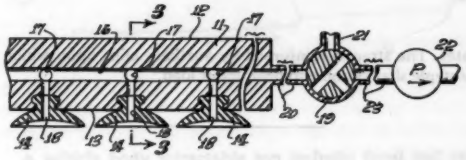


A latch mechanism for use in releasably supporting one side or end of a hingedly mounted frame which may be disposed in a suspended ceiling below a utility device such as a light fixture, air vent, or the like. The suspended ceiling generally comprises a grid of inverted T-shaped beams defining a plurality of generally rectangular openings in which ceiling tiles are disposed and, at selected locations, the utility device may be positioned above the rectangular opening with the frame disposed in the opening and with the frame supporting a panel such as a light fixture lens, grill, or the like. Access to the utility device requires removal of the frame and the panel it supports and the latch mechanism disclosed herein provides a quick and convenient means by which a person standing below the utility device may obtain access thereto by simply elevating the panel relative to the frame so as to actuate the mechanism effecting release and permitting the end of the frame to swing downwardly about its hinged opposite side or end. The latch is biased to the operative supporting position so that the frame and panel may be returned to the latched position by simply swinging the free end of the frame and panel upwardly to automatically effect the latching.

3,720,433
MANIPULATOR APPARATUS FOR GRIPPING SUBMERGED OBJECTS

Andre M. Rosfelder, La Jolla, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Sept. 29, 1970, Ser. No. 76,345
Int. Cl. B66c *1/02*
U.S. Cl. 294—64 R **5 Claims**



A resilient, plate-like body member is secured to an articulated manipulator frame in position to be moved by the frame into a pressurized, gripping contact with the object to be manipulated. The body member carries a plurality of closely spaced suction cups which directly engage and grip the object and, to augment the gripping action as well as permit release of the suction grip of the cups, the body member is provided interiorly with a main hydraulic circuit extending in network fashion into relatively close proximity with each suction cup. A separate hydraulic conduit communicates the central portion of each cup with the hydraulic circuit and the circuit leads to a valve movable from a closed to an open position in which the hydraulic circuit as well as the cups which it serves are exposed to the sea water environment. The suction grip is achieved by pressing the body member into engagement with the object. Release of the object is achieved by opening the valve to admit environmental water which relieves the suction grip. A pump also may be coupled to the main hydraulic circuit through the valve to increase the gripping action. To accommodate irregularly shaped objects, the resilient body member can be made to conform by using a plurality of cells that can be expanded or contracted by pressurized fluid to produce a desired bend. To avoid the loss of suction from cups not in contact with the object, the cups each may be provided with an automatic valve having a balanced piston actuated by a pin only when the cup engages the object.

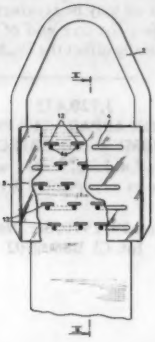
3,720,434
CARGO SLING

Jean-Francois Archer, La Celle Saint-Cloud, France, assignor to Societe Technique d'Acessoires Speciales, Asnieres (Hauts de Seine), France

Filed Feb. 2, 1971, Ser. No. 111,846
Claims priority, application France, Feb. 3, 1970, 703639; April 23, 1970, 7014726
Int. Cl. B66c *1/18*
U.S. Cl. 294—74 **7 Claims**

A strap for a cargo sling has an extremity sandwiched between at least one pair of perforated anchor plates traversed by staples whose shanks pass through their perforations with a

clearance decreasing progressively toward the free end of a coupling member fixedly or hingedly secured to the anchor



plates. The strap is reinforced by auxiliary clips upon which the staple shanks come to bear under load.

3,720,435

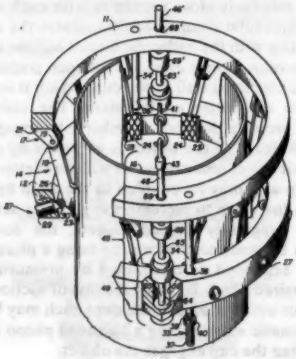
SPUD CLAMPING DEVICE

Harold F. Leyn, 2719 Calhoun Street, Alameda, Calif.

Continuation-in-part of Ser. No. 777,272, Nov. 20, 1968. This application Feb. 2, 1970, Ser. No. 7,803

Int. Cl. B66c *1/00*

U.S. Cl. 294—88 **18 Claims**



An upper ring or frame having two or more gripping members hingedly depending therefrom encircles a spud. A lower ring or frame also encircles the spud and bears inwardly against the gripping members through a means for multiplying and changing the vertical force to a horizontal force so that axially raising the lower ring relative to the upper ring causes the gripping members to frictionally engage the spud. Self-clamping is achieve by connecting the lifting means to the lower ring. Release of the gripping members is effectuated by transferring the lifting force point of attachment from the lower ring to the upper ring.

3,720,436

MANIPULATING TOOL FOR A NUCLEAR REACTOR COMPONENT PROVIDED WITH A HANDLE

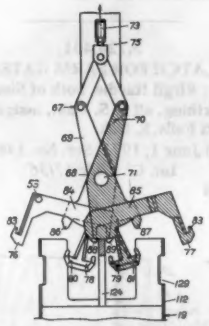
Antti Suvanto and Hilding Nilsson, Vasteras, Sweden, assignors to Aktiebolaget Asea-Atom, Vasteras, Sweden

Filed Apr. 20, 1970, Ser. No. 30,196

Claims priority, application Sweden, Apr. 21, 1969, 5,576/69

Int. Cl. B66c *1/28*

U.S. Cl. 294—88 **3 Claims**



A manipulating tool for a nuclear reactor component, such as a shroud tube having holes in its upper end, a fuel rod bundle or a control rod provided at its upper end with a handle, or a complete fuel assembly having said bundle in said shroud tube. The tool is formed of two crossing legs pivoted together and connected at their upper end to an operating member. The legs have first and second hooks for simultaneous engagement in the holes and in the handle respectively, and oppositely directed third hooks for engaging in the handle only.

3,720,437

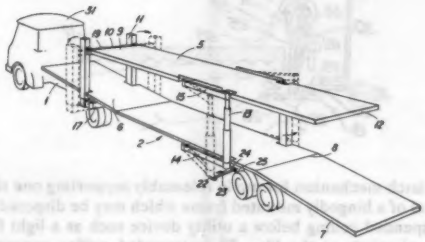
TRANSPORTER VEHICLES

John Robert Lambert, Birch, near Colchester, England, assignor to Redment Engineering Company Limited, Essex, England

Filed May 21, 1971, Ser. No. 145,769

Int. Cl. B60p *3/06*

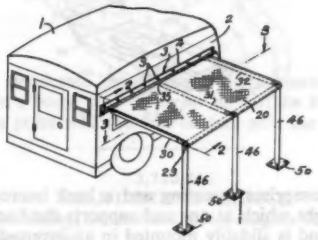
U.S. Cl. 296—1 A **12 Claims**



A load carrying vehicle for transporting loads on two vertically spaced decks the upper of which may be raised and lowered at least at its lower end, comprising a wheeled chassis, self-propelled or semi-trailer, supporting a lower deck, an upper deck supported at its front and rear end

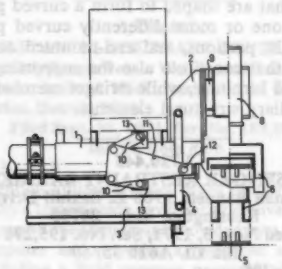
portions above the lower deck on supports, the upper deck supports at least at the rear end being variable in height and mounted on members pivoted to the vehicle structure, including the upper deck, about vertical axes to permit outwards sideward swinging of the supports for mounting loads on the upper and lower decks.

3,720,438
AWNING FIXTURE
Wilbur D. Johnson, and Edna F. Johnson, both of 639 Sartori Avenue, Torrance, Calif.
Filed April 16, 1971, Ser. No. 134,758
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 R **3 Claims**



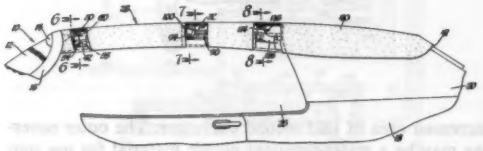
The awning for a camper or trailer or similar vehicle is provided along one edge with a fixture for reception in a rail usually attached to this type of vehicle. The fixture comprises two tubular members joined by a webbing, one tubular member is receivable within the rail connected to the camper or trailer and the other tubular member is provided with a longitudinal slot adapted to receive the pocket formed on the awning along the upper edge thereof. This pocket usually receives a rope and the awning body extends outwardly through the slot in said tubular member of the fixture with the lower edge of said awning provided with a pocket to receive a bar or tube with supporting posts to maintain the awning in position of service. The construction allows a single workman to attach the awning to the rail or to disassemble the awning from the rail for storage purposes. When the awning is erected, winds will not effect the same in a manner to dislodge the awning from the rail and will likewise assure that rain and other inclement weather will not cause leakage between the awning and the rail.

3,720,439
CONCRETE PAVING MACHINES
Alan Rimmington, Chesterfield, England, assignor to Robert McGregor & Sons Limited, Derbyshire, England
Filed Sept. 3, 1970, Ser. No. 69,395
Claims priority, application Great Britain, Sept. 16, 1969, 45,615/69
Int. Cl. E01c *19/48*
U.S. Cl. 296—28 **4 Claims**



A concrete paving machine comprises a main frame carrying a transversely-disposed conforming plate which, as the machine advances, levels plastic concrete delivered ahead of the machine, sub-frames mounted on endless tracks and upon which the main frame is supported with vertical adjustment and, between the main frame and each sub-frame a system of parallel linkage operable to constrain the sub-frame to move in a vertical plane relative to the main frame.

3,720,440
VEHICLE BODY RETRACTABLE TOP
Edward G. Podolan, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 26, 1971, Ser. No. 202,259
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 B **7 Claims**

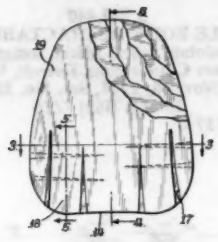


A vehicle body retractable top includes front and rear movable roof panels supporting respective rollers. A strut extends between the vehicle body windshield header and a fixed roof panel that cooperatively define a roof opening. Channel members supported by the strut receive the rollers to mount the front and rear panels. A drive mechanism translates the front panel between a forward raised position engaging the windshield header and a rearward storage position below the fixed roof panel. A latch mechanism selectively connects the rear panel to the drive mechanism for translatory movement between a rearward storage position below the stored front panel and a forward raised position extending between the fixed panel and the raised front panel. A sheet of flexible material has one edge secured to the fixed panel and the opposite edge secured to the front panel such that the sheet covers and seals the junctures between the panels when the front and rear panels are in raised position. The sheet of flexible material assumes a generally out-of-sight folded position between the fixed panel and stored front panel. Control rollers engage control channel members and cam the rearward end of the rear panel upward into the plane of the fixed panel such that the roof surface is continuous when the front and rear panels are in raised position.

3,720,441
DOUBLE CURVATURE PLYWOOD SHEET FOR BACK REST
Charles E. Corchran, Lake Hubert, Minn., assignor to Variety Products Inc., Waseca, Minn.
Filed Apr. 7, 1971, Ser. No. 132,009
Int. Cl. A47c *3/00*
U.S. Cl. 297—284 **5 Claims**

The disclosure describes a rigid sheet of plywood formed to have a double curvature. One use described is as a portable back rest, padded with a soft material of uniform thickness, such as foam rubber, which is then provided with an over-cover of an upholstering material suited to the environment in which the back rest is to be used. In the forming of the double curvature the plywood plies are steamed and assembled progressively in

dies having curvatures shaped to conform to the double curvature of the user's lower back. To accomplish the double curvature in what is substantially non-stretchable plywood the plies are slit over the second curvature to allow the ply to spread thereover and conform to the

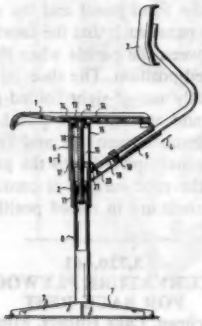


increased area of said second curvature. The outer covering may be a water-repellant plastic material for use outdoors, or it may be an upholstery material where the back rest is to be used indoors with overstuffed furniture or the like which is improperly contoured for properly supporting a user's back.

3,720,442
CHAIR

Rainer Bergmann and Klaus Fleischmann, Dortmund-Mengede, Germany, assignors to Hohenloher Schulmobelfabrik Schaffitzel KG, Obringen, Germany

Filed Oct. 29, 1971, Ser. No. 193,843
Claims priority, application Germany, Oct. 29, 1970, P 20 53 057.8; Apr. 8, 1971, P 21 17 417.4
Int. Cl. A47c *3/20, 3/40*
U.S. Cl. 297—348 **26 Claims**

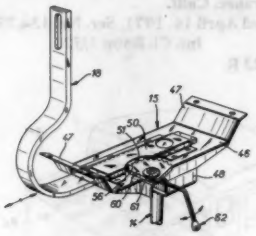


A chair having a base adapted to rest on the floor, a seat adjustable to different heights from the base, a back rest adjustable in an upwardly inclined direction from the rear side of the seat to different distances from the base and from the seat, and common means for adjusting the seat and back rest so as to increase or reduce their heights and positions simultaneously but differently from each other.

3,720,443
SEATS

Roger Mourgue, Joinville-le-Pont, France, assignor to Modern'Tube Societe Anonyme, Montreuil, Seine, Saint Denis, France

Filed Apr. 19, 1971, Ser. No. 135,010
Claims priority, application France, Apr. 27, 1970, 7015247
Int. Cl. A47c *3/24*
U.S. Cl. 297—383 **9 Claims**

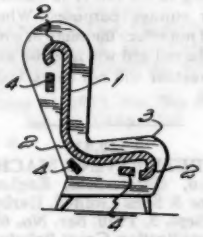


A seat comprises a seating and a back interconnected by an upright which at one end supports the back and at the other end is slidably mounted in an inverted channel shaped plate and is connected by coupling means to an adjustment lever pivotally mounted on the plate.

3,720,444
STRUCTURE FOR BUILDING FURNITURE

Juan B. Uthurriague, Calle 55, N° 1036, La Plata, Argentina

Filed Sept. 24, 1970, Ser. No. 75,000
Claims priority, application Argentina, Sept. 26, 1969, 224,350
Int. Cl. A47c *15/00, 31/00*
U.S. Cl. 297—463 **9 Claims**



A structure for building furniture, comprising one or more sheets that are shaped to form a curved profile that may include one or more differently curved portions as well as straight portions, and end-mounted on reinforcing members that constitute also the supporting elements of the piece of furniture, while stringer members are provided as auxiliary structural elements.

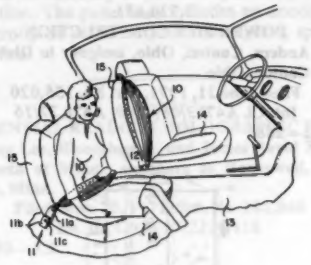
3,720,445
PASSENGER RESTRAINT BARRIER

Norman Bennett, 9900 E. Bexhill Drive, Kensington, Md. 20795

Filed Nov. 3, 1971, Ser. No. 195,298
Int. Cl. A62b *35/60*
U.S. Cl. 297—390 **11 Claims**

Passenger injury on sudden stoppage of an automobile is prevented by a barrier placed horizontally across the passenger's seat, against which barrier the passenger's

body is forcibly projected by its momentum. The barrier has an impact cushion engageable by the passenger's body in a manner to cushion the initial shock and at the same



time to decelerate progressively the momentum of the passenger's body, and to arrest its further forward motion at a point well short of contact with the windshield.

3,720,446

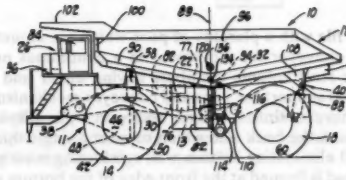
REAR DUMPING VEHICLE

Douglas M. Kelley, Chesterland, Ohio, assignor to Euclid, Inc., Cleveland, Ohio

Filed Feb. 16, 1971, Ser. No. 115,480

Int. Cl. B60p 1/16

U.S. Cl. 298—22 R **10 Claims**



A four wheel rear dumping truck in which the center of gravity of the truck is located substantially along a vertical line between forward and rear truck wheels in both the loaded and unloaded conditions of the truck so that wheel loadings are proportionately the same whether the truck is loaded or unloaded.

Each wheel is independently driven by an electric motor. Electrical power is supplied by a prime mover located between the fore and aft wheels. The dump body is supported over the prime mover and is shaped so that the material forming the load has a center of gravity located above the location of the center of gravity of the unloaded truck.

3,720,447

HYDRAULIC ANTI-LOCK BRAKE CONTROL SYSTEM

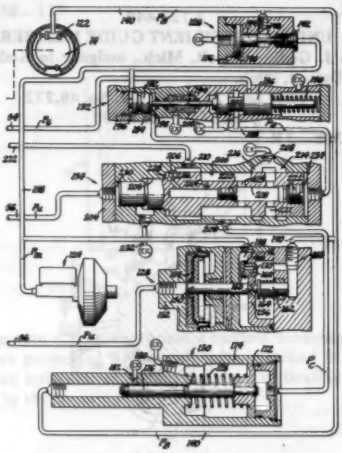
John L. Harned, Grosse Pointe Woods, and Laird E. Johnston, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 30, 1971, Ser. No. 185,088

Int. Cl. B60t 8/06

U.S. Cl. 303—21 B **3 Claims**

The invention utilizes a wheel speed proportional pressure generated by a transmission governor or equivalent means and a vehicle ground speed pressure provided by a vehicle ground speed computer and provides a hydraulic anti-lock brake system including a fluid pressure operated wheel brake, an operator actuated master cylinder, a hydraulic actuator which determines the level of brake pressure at the wheel brake, a control valve which modulates the wheel speed pressure to provide a regulated pressure proportional to the amount by which the master cylinder pressure exceeds the brake pressure, and a servo valve which amplifies the regulated pressure to provide a control pressure which operates the hydraulic ac-



tuator. The servo valve also compares the regulated pressure with the vehicle ground speed pressure and varies the control pressure in response to the wheel slip condition so as to provide a nearly constant wheel slip.

3,720,448

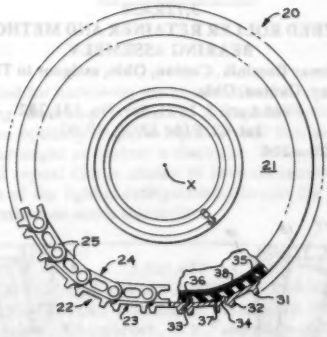
CUSHIONED TRACK WITH ANTI-SLIPPAGE MEANS

Norman R. Allen, Washington; Roger L. Boggs, East Peoria, and Robert N. Stedman, Chillicothe, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 20, 1970, Ser. No. 91,488

Int. Cl. B60c 27/20

U.S. Cl. 305—19 **12 Claims**



A resilient spacer means, such as a pneumatic rubber tire, has an endless track assembly circumferentially mounted thereon to form a cushioned track. The track assembly comprises an annular, articulated link assembly positioned on each side of the spacer means to closely couple a plurality of ground-engaging track shoes together. Each shoe has anti-slip-

page means secured thereto to imbed into the tread of the spacer means to prevent slippage thereof, relative to the track assembly, during cushioned track operation.

3,720,449

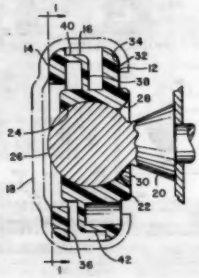
UNITARY RESILIENT GUIDE MEMBER

Edmund J. Godin, Detroit, Mich., assignor to Kedsell Company, Detroit, Mich.

Filed June 22, 1970, Ser. No. 48,272

Int. Cl. F16c *17/00*

U.S. Cl. 308—3 R **7 Claims**



A unitary resilient guide member including two transversely spaced apart portions connected together for resilient movement toward and away from each other is disclosed. One of the two transversely spaced apart portions includes a hub part for connection to a window regulator member and a radially extending flange part at one end of the hub part. The other of the two transversely spaced apart portions, which is annular, and the flange part of the one portion are connected together by angularly spaced apart double cantilever portions which permit the resilient movement of the flange part and annular portion toward and away from each other. In one embodiment the guide member is a roller and is adapted to fit within a window regulator track member having a C-shaped cross section, while in another configuration the guide member is a slide and is adapted to be slidably secured between a pair of T-shaped window regulator track cross sections.

3,720,450

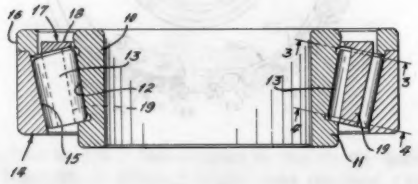
TAPERED ROLLER RETAINER AND METHOD OF BEARING ASSEMBLY

Erich Dietmar Dominik, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed April 5, 1971, Ser. No. 131,282

Int. Cl. F16c *33/00, 19/00*

U.S. Cl. 308—214 **4 Claims**



A tapered roller retainer for tapered roller bearings in which the retainer is a one-piece molded body having a single flange supporting roller cage fingers. The roller cage fingers form reverse tapered pockets for the tapered rollers and the body of the retainer is sufficiently resilient to permit flexing of the cage fingers to facilitate insertion of the tapered rollers. The flexing of the tapered roller retainer with the reverse tapered roller pockets improves and facilitates bearing assembly methods.

3,720,451

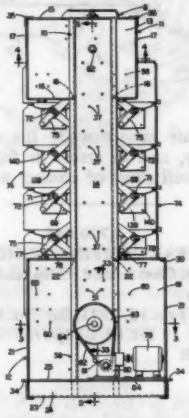
POWER FILE CONSTRUCTION

Walter G. Anders, Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed June 21, 1971, Ser. No. 155,020

Int. Cl. A47f *3/08, 5/00*; A47b *77/16*

U.S. Cl. 312—268 **12 Claims**



A power file with a plurality of pans which are mounted on an endless conveyor for movement in a continuous orbit of travel. Side strut column members having upper and lower box members support the pans and conveyor mechanism. The pans each have a reinforced back wall with a plurality of gussets hung from the back wall which support a single thickness bottom wall eliminating bottom wall reinforcing members. A box trim bead is formed at the front edge of the bottom wall to provide stiffness for the bottom wall and to trap filed material. A plurality of slots in the back wall and front box trim bead hold removable dividers in the pans. Splicing members permit several file column sections to be mounted vertically upon one another forming a power file several stories high which can be shipped in knocked-down form and assembled at the installation site.

3,720,452

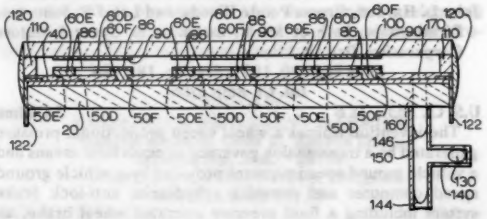
MULTI-POSITION CHARACTER DISPLAY PANEL

George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 16, 1971, Ser. No. 124,681

Int. Cl. H01j *7/38*

U.S. Cl. 316—24 **2 Claims**



The display panel is gas-filled and includes a plurality of character positions. The panel is of a sandwich con-

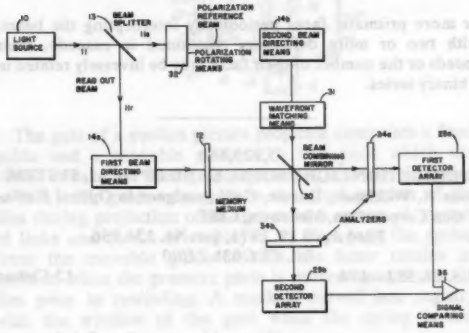
struction and includes a base plate on which a plurality of groups of cathodes and their conductors or leads are formed. The cathodes are in the form of bars or segments and can display a character. The cathodes are coated with a layer of mercury to prevent sputtering during normal operation. The panel also includes an anode electrode for each group of cathodes and a face plate, spaced from the base plate.

3,720,453

DIFFERENTIAL READOUT HOLOGRAPHIC MEMORY

Tzuo-Chang Lee, Bloomington, and James David Zook, Burnsville, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Sept. 20, 1971, Ser. No. 181,846
Int. Cl. G02b 27/22; G11b
U.S. Cl. 350—3.5 **18 Claims**



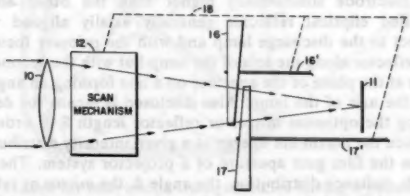
A holographic optical memory utilizes a differential technique to significantly increase the signal-to-noise ratio during the readout stage of operation.

3,720,454

OPTICAL FIELD CURVATURE CORRECTOR

John A. Inderhees, Cincinnati, Ohio, assignor to Avco Corporation, Cincinnatti, Ohio

Filed May 14, 1971, Ser. No. 143,533
Int. Cl. G02b 17/00
U.S. Cl. 350—7 **1 Claim**



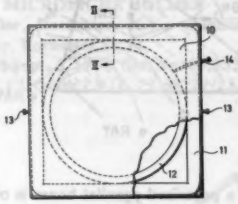
The invention is a device utilizing one or more carefully oriented optical prisms to alter the optical path length of a converging radiant-energy-ray bundle between the lens and the image plane of an optical system and to effect a focal correction in the information which may be collected through sequential scanning of the image plane.

3,720,455

PROJECTION SCREEN

John Carl Erik Sahlin, Sergels vag 11 C, S-217 57 Malmo, Sweden

Filed Aug. 2, 1971, Ser. No. 168,027
Int. Cl. G03b 21/56
U.S. Cl. 350—117 **5 Claims**



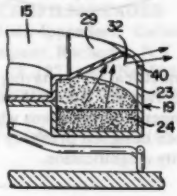
A projection screen comprises a flexible covering forming the picture projecting surface which is stretched to a planar form by an inflatable stiffening structure of flexible material enclosed by the covering.

3,720,456

METHOD FOR NARROWING THE BANDWIDTH OF AN OPTICAL SIGNAL

James E. Adams, Ontario, and Werner E. L. Haas, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed April 29, 1971, Ser. No. 138,506
Int. Cl. G02b 5/30
U.S. Cl. 350—157 **11 Claims**



A method for narrowing the bandwidth of an optical signal comprising directing a linearly polarized optical signal through an optically negative liquid crystal film and a linear analyzer arranged in tandem is disclosed. The optically negative liquid crystal film is chosen to have characteristics such that some of the light is extinguished whereas the remainder escapes extinction and is transmitted.

3,720,457

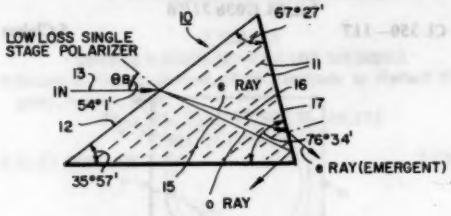
SYSTEM FOR POLARIZING OPTICAL ENERGY AND TRANSMITTING THE SAME THROUGH MEDIA

Jerome Swartz, Stoneybrook, N.Y., and Donald K. Wilson, West Caldwell, N.J., assignors to Special Optics Inc., Cedar Grove, N.J.

Filed Nov. 18, 1970, Ser. No. 90,656
Int. Cl. G02b 5/30
U.S. Cl. 350—157 **40 Claims**

The essence of the invention resides in a unique prism arrangement for polarizing a limited angular apertured beam and the minimum reflection loss transmission of the extraordinary ray of the beam through isotropic and/or anisotropic media. In a first stage uniaxial medium the extraordinary ray is

transmitted therethrough when the angular apertured beam strikes the entrance boundary at the Brewster angle with the optic axis of the uniaxial medium parallel to that boundary surface and the ordinary ray is totally reflected at the exit



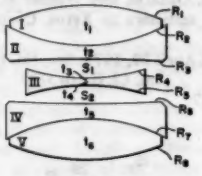
boundary and a polarized parallel beam is obtained with the utilization of a second stage of isotropic or anisotropic material wherein the gap between the first and second stages may be uniform or tilted.

3,720,458

SYMMETRICAL LENS

Lynn L. Van Orden, Holley, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,046
Int. Cl. G02b 9/26, 17/08
U.S. Cl. 350—227 **54 Claims**



A family of symmetrical lenses having three components of which the outside two are doublets consisting of an outer biconvex and an inner biconcave lens while the interior lens is biconcave, has been designed primarily for photographic use at substantially unity magnification.

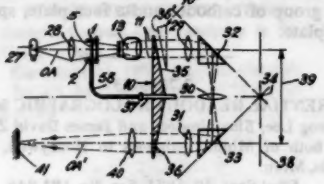
3,720,459

OPTICAL SYSTEM WITH CONTINUOUS FILM TRANSPORT

Guy Roger Jules Bach, 58 Grande Rue, Neufmontiers-les-Meaux, France

Filed March 31, 1971, Ser. No. 129,917
Claims priority, application France, April 1, 1970, 7011696; March 5, 1971, 7107732
Int. Cl. G03b 41/04
U.S. Cl. 352—113 **12 Claims**

A motion-picture camera or projector has a continuously moving film transporter adjacent one or more light-ray deflectors operating in synchronism therewith, each deflector including at least one fully or partly transparent disk with mutually inclined sides generally perpendicular to the path of a beam transluminating the film, advantageously in a zone where the rays of the beam are parallel. At the instant when a frame of the film is centered on the optical axis, the disk or disks are so positioned that the exciting beam section is in line with the entering beam section; at other instants the two beam sections are relatively deflected, in a direction parallel to the line of film movement, to compensate for the offset of the frame from the optical axis. WIth a single disk per deflector, the beam successively passes with intervening ray transposition through a pair of conjugate peripheral disk portions; alternately, a deflector may consist of a pair of counterrotating disks with overlapping peripheral portions interposed in the beam path. The optically effective disk portions may form one



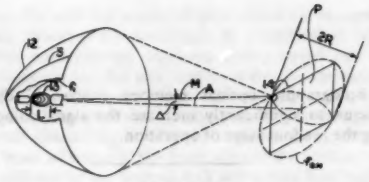
or more prismatic faces periodically intercepting the beam; with two or more deflectors positioned in cascade, their speeds or the number of their faces may be inversely related in a binary series.

3,720,460

PROJECTION LIGHT SOURCE AND OPTICAL SYSTEM

John N. Wilkinson, Durate, Calif., assignor to Optical Radiation Corporation, Monrovia, Calif.

Filed April 19, 1971, Ser. No. 134,956
Int. Cl. G03b 21/00
U.S. Cl. 352—198 **13 Claims**

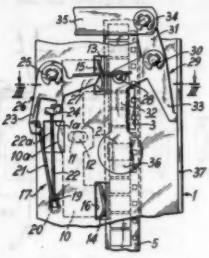


Disclosed is a lamp and reflector system designed to produce maximum energy through an aperture at a pre-determined intensity distribution across an aperture, particularly the film gate aperture of a movie projection system. The invention involves a gaseous discharge lamp having an arc or light source region of varying radiance with the radiance at one electrode substantially higher than the other and a modified eliptical reflector generally axially aligned with respect to the discharge lamp and with the primary focus of the reflector along the axis of the lamp but with the secondary focus at the plane of the aperture on a line forming an angle Δ with the axis of the lamp. Also disclosed is means for determining the optimum mirror or reflector length S in order to produce the maximum energy at a given intensity distribution across the film gate aperture of a projector system. The arc length, radiance distribution, the angle Δ, the mirror or reflector length S and the aperture dimensions are correlated for a reasonable projection *f*/number in a manner that the image of the brightest portion of the arc is superimposed upon the extremities of the aperture from all points on segment S and the images of the arc at the aperture from various points on the ellipse segment form a family of images with the average size equal to approximately ¾ of the diagonal dimension. In achieving this type of image, the highest radiance portion of the arc is placed at the first focus of the mirror.

3,720,461
MOTION PICTURE PROJECTOR

Herbert Reinsch, Koengen, and Peter Korner, Reichenbach, Germany, assignors to Robert Bosch Photokino G.m.b.H., Stuttgart, Germany

Filed Feb. 17, 1970, Ser. No. 12,075
Claims priority, application Germany, Feb. 27, 1969, P 19 09 790.6
Int. Cl. G03b 1/50
U.S. Cl. 352—224 7 Claims

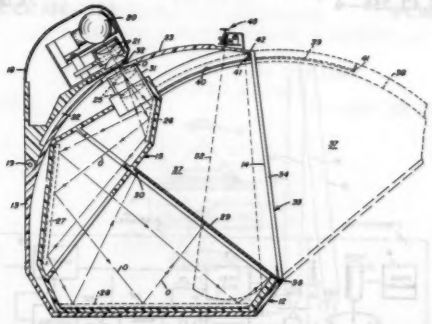


The gate of a motion picture projector comprises a fixed guide and a movable guide with two pads which are biased toward the fixed guide by one leg of a hairpin spring so that each guide engages one marginal portion of the film during projection of images onto a screen. A system of links and levers is employed to disengage the spring from the movable guide so that the latter retains its position when the pressure plate is moved away from the film prior to rewinding. A mask is moved into registry with the window of the gate when the spring is disengaged from the movable guide.

3,720,462
MICROFICHE FILM READER

George J. Dali, and William E. White, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 21, 1970, Ser. No. 39,188
Int. Cl. G03b 23/08, 21/22
U.S. Cl. 353—27 12 Claims

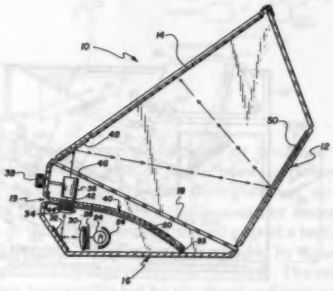


A reader for microfiche transparencies having a plurality of images arranged thereon in an X-Y format comprises a housing in which a light-tight casing is arranged which carries a projection lens system, a mirror system and a viewing screen which encloses one side of the casing adjacent or facing an opening in the reader housing. The housing supports a lamp housing and a movable U-shaped member which carries a clamp means for engaging the transparency along an edge thereof. The U-shaped member moves the microfiche back and forth in one direction to intercept the optic axis and the clamp means moves the transparency in the other direction normal to the first direction to also intercept the optic axis. An actuating means is connected to the U-shaped member and to the clamp means so that the transparency can be moved in both directions simultaneously or independently in either one of the directions.

3,720,463
MICROFICHE HOLDER

Clarence R. Taylor, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 2, 1970, Ser. No. 69,053
Int. Cl. G03b 21/14, 23/08, 21/22
U.S. Cl. 353—27 9 Claims

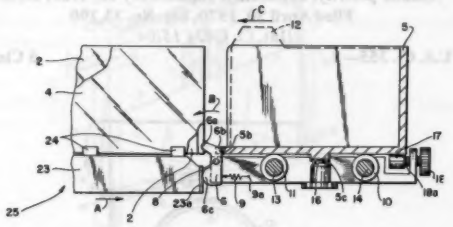


A microfiche holder for a microfiche reader includes a guide surface having a series of corrugations which provide a tactile reference to the operator as he inserts a microfiche into the holder.

3,720,464
MICROFILM READER

Hans L. Ditscheid, Bonn-Ippendorf, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,829
Claims priority, application Germany, Feb. 20, 1970, G 70 06 080.9
Int. Cl. G03b 23/08, 23/14
U.S. Cl. 353—27 10 Claims



A microfilm reader having a film gate adapted to receive information carriers therein which can be selectively moved between and to projection and loading positions. The information carriers are individually accommodated in the compartments of a magazine which is movably mounted on the reader to allow indexing of the different compartments with respect to the loading position of the film gate. Each magazine compartment is provided with a recess by which a blocking member, located on the reader in the loading region of the film gate, holds the magazine and compartment from which the information carrier has been extracted in fixed alignment with the holding plates of the film gate when it is moved from its loading position. Blocking action is disenabled by move-

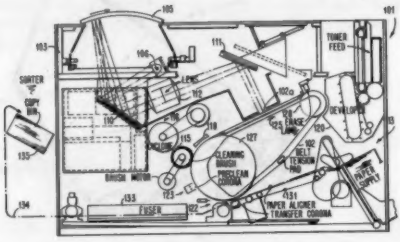
ment of the film gate to its loading position, the holding plates being synchronously opened by such movement and then closed about a selected information carrier when the film gate is moved away from its loading position.

3,720,465

ELECTROPHOTOGRAPHIC APPARATUS WITH SYNCHRONIZED DOCUMENT ILLUMINATION AND SCANNING FEATURE

George D. Bruce; Ronald V. Davidge; Raymond L. Fowler; George W. Hobgood, Jr.; Henry C. Locklar, Jr., and George W. Van Cleave, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,447
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 2 Claims



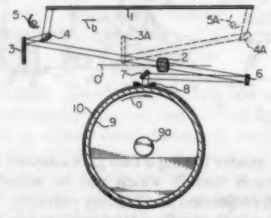
The optical illumination and scanning system for document reproduction consists of two rotatable mirrors mounted in fixed side-by-side relationship. A light source illuminates the first mirror which reflects the light to a section of an original document. This light is reflected by the document to the second mirror which reflects this return beam through a lens system to a photoconductor surface. The mirror assembly oscillates across the entire original without changing the fixed relationship between the light beam reflected to the original and the return beam focused on the photoconductive surface.

3,720,466

SLIT EXPOSURE OPTICAL SYSTEM FOR REPRODUCING APPARATUS OR THE LIKE

Yutaka Koizumi, Kohoku-ku, Yokohama-shi, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Claims priority, application Japan, May 16, 1969, 44/45773
Filed April 30, 1970, Ser. No. 33,290
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 5 Claims



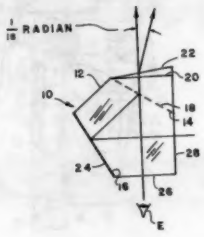
A slit exposure optical system for use in a reproducing apparatus having a fixed projection lens for projecting a scanned image of the object on a photoreceptor and a mirror arrangement for scanning the object including only two movable mirrors disposed between the projection lens and the object. The first movable mirror is disposed transversely to the optical axis of the projection lens and the plane of the object and the second movable mirror is disposed to face the first movable mirror and the object and is moved at twice the speed of the first movable mirror.

3,720,467

INCONSPICUOUS RANGING DEVICE FOR GOLFERS

John D. Strong, 5 Chadwick Court, Amherst, Mass.

Filed Nov. 20, 1970, Ser. No. 91,397
Int. Cl. G01c *3/00*
U.S. Cl. 356—3 19 Claims



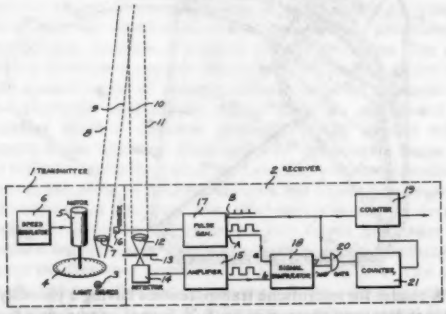
An inconspicuous optical-triangulation ranging device for golfers typically comprising, in the various embodiments, a composite of a pentaprism and one or more simple prisms for observing and comparing three views, a view of the green, a reference view, normal to the first view, of a feature of the landscape, and a view, deviated by a known angle, of one of the first two views; structures for hinged attachment of the device to a cap brim and for rotation of the prism assembly to look to the right or left are disclosed.

3,720,468

DEVICE FOR A TRANSMITTER RECEIVER UNIT WHICH GIVES AN INDICATION WHEN AN OBJECT REFLECTS RADIATION TRANSMITTED FROM THE TRANSMITTER TO THE RECEIVER

Lars-Erik Skagerlund, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 23, 1971, Ser. No. 118,029
Claims priority, application Sweden, March 2, 1970, 2702/70
Int. Cl. G08b *13/00*; G01s *9/00*
U.S. Cl. 356—4 7 Claims



Apparatus for indicating reflected radiation from a remote object comprises a transmitter for transmitting amplitude-modulated radiation and a receiver for receiving the amplitude-modulated radiation reflected from the remote object. The receiver includes first means for receiving the reflected radiation and converting it to first pulse signals and second means for receiving the amplitude-modulated radiation

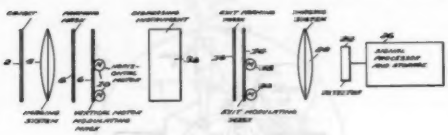
directly from the transmitter and converting it to second pulse signals. Means compare the first and second pulse signals for giving indications in accordance with the simultaneous phases of said first and second pulse signals.

3,720,469

SPECTROMETRIC IMAGER

Martin Harwit, Ithaca, N.Y., assignor to Spectral Imaging Inc., Concord, Mass.

Filed Jan. 25, 1971, Ser. No. 109,432
Int. Cl. G01j 3/02
U.S. Cl. 356—74 13 Claims



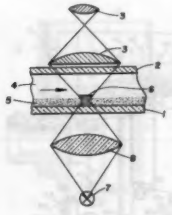
An optical device modulates radiation such as light from an extended object and focuses it onto a single detector in such a way that the modulation gives both spatial resolution of different points on the object and spectral resolution of light coming from each point on the object. The signal received by the detector can then be demodulated to reconstruct both the spatial and spectral properties of the initial extended object. A mask pattern is used, which can be variably exposed in successive steps to produce a cyclic encoding pattern in two dimensions. For an image resolved into $p \times m$ elements, the mask need only have $[2p-1]$ $[2m-1]$ elements, instead of $p^2 \times m^2$ modulating elements.

3,720,470

APPARATUS AND METHOD FOR OPTICAL DETERMINATION OF PARTICLE CHARACTERISTICS

Ernst Berkhan, Gottingen, Germany, assignor to Phywe Aktiengesellschaft Gottingen, Gottingen, Germany

Filed Aug. 16, 1971, Ser. No. 171,915
Claims priority, application Germany, Oct. 15, 1970, P 20 50 672.3
Int. Cl. G01n 15/02, 21/00; G01j 3/46
U.S. Cl. 356—102 8 Claims



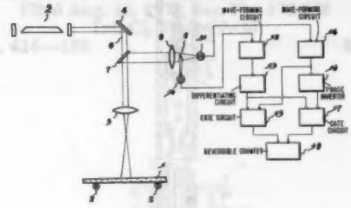
A shallow chamber is provided for passing through it a stream which envelopes a capillary stream of the particles, the characteristics of which are to be determined. The particles are in suspension in this capillary stream, which moves over the lower wall of the shallow chamber. At least one wall of the flow-through chamber is transparent and is arranged so that the focal area of the observing microscope coincides with the depth of the capillary stream.

3,720,471

METHOD FOR MEASURING PLATE THICKNESS

Ichiro Kasahara, Mitaka-shi, Tokyo, and Hideki Yamaguchi, Toshima-ku, Tokyo, both of Japan, assignors to Nihon Denski Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1970, Ser. No. 13,976
Int. Cl. G01b 9/02
U.S. Cl. 356—108 6 Claims



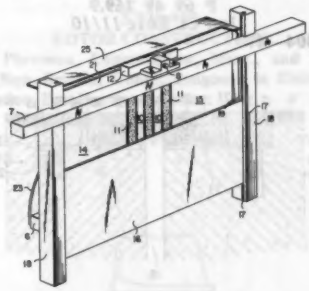
A method for measuring an increase or decrease in the thickness of a transparent glass or plastic plate, by differentiating between the convergence and divergence of an interference fringe pattern caused by the increase or decrease in the thickness of the plate when it is moved passed a testing station. The interference fringe pattern is created by directing a non-parallel pencil or wedge of rays on the plate. The resulting two sets of rays being reflected by the front and rear surfaces of the plate are directed and focused to a light detector. By detecting the convergence or divergence of the fringe pattern and counting the fringe rings passing the detector, the change in thickness of the plate is measured.

3,720,472

VARIABLE-BAR RESOLUTION TARGET

Robert L. Denningham, Forest Heights, Md., assignor to the United States of America as represented by the Secretary of the Navy

Filed Oct. 22, 1971, Ser. No. 191,696
Int. Cl. G01b 9/00; A61b 3/00
U.S. Cl. 356—124 4 Claims



This disclosure is directed to a variable-bar resolution target for use in making resolution measurements on optical devices. The device includes a plurality of elongated flat bars which are secured at their ends to spacer supporting members by suitable pins for rotation relative to the securing pins. The spacer support members are constructed so that each bar is held in a vertical plane spaced from each other with adjacent plates overlapping each other. Therefore, rotation of the spacer support members increases or decreases the overlap of the plates thereby increasing or decreasing the overall width of the target.

3,720,473

INK CARTRIDGE FOR A WRITING IMPLEMENT

Toshihiro Nakata, Taito-ku, Tokyo, Japan, assignor to Platinum Pen Co., Ltd., Tokyo, Japan

Filed May 21, 1971, Ser. No. 145,838
Claims priority, application Japan, April 14, 1971, 46/23582
Int. Cl. B43k *5/08, 5/14*
U.S. Cl. 401—40 6 Claims

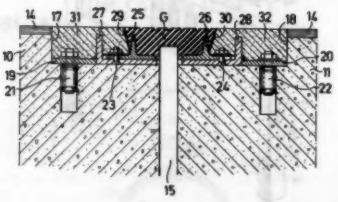
An ink cartridge for a writing implement. The cartridge has a first cylinder defining an ink producing chamber, a first piston in the first cylinder axially movable to suck water into the ink producing chamber, a second cylinder in the first piston containing a concentrated ink, a second piston in the second cylinder axially movable to dispense a metered amount of the concentrated ink into the ink producing chamber whereby both liquids are mixed to produce an ink of desired thickness.

3,720,474

EXPANSION JOINT

Wilhelm Stog, Waltrop, and August Krefter, Lunen, Germany, assignors to W. Stog KG, Industrie- und Rohrleitungsbau, Waltrop, Germany

Filed Dec. 9, 1970, Ser. No. 96,321
Claims priority, application Germany, Dec. 20, 1969, P 69 49 269.9
Int. Cl. E01c *11/10*
U.S. Cl. 404—47 5 Claims



An expansion joint for road sections joining with a bridge, or with another road section etc. forming a strip-like band from resilient materials, such as a rubber band having indentations at the lower surface thereof which are arranged parallel to the side joints and supports means including support ribs being arranged on supporting plates, said ribs lying in engagement with said indentations. The support means may comprise support shoulders having projections which engage with the resilient band as well as support ribs to secure the cast filling material used for the excisions of the drive way sections adjacent to the resilient band. Preferably the support shoulders rest on a shock absorbing layer or plate of plastics material and the resilient band is provided with stabilizing cams being inserted into the lower side thereof.

ERRATUM

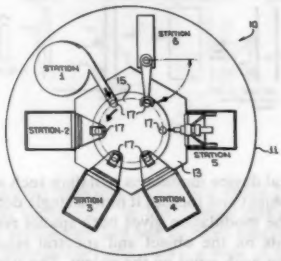
For Class 404—47 see:
Patent No. 3,720,142

3,720,475

AUTOMATIC MACHINE TOOL

Ronald Leacock, 4719 Fielder St., Tampa, Fla.

Filed Dec. 22, 1970, Ser. No. 100,714
Int. Cl. B23b *39/20*
U.S. Cl. 408—44 6 Claims



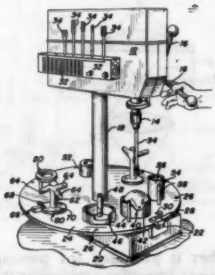
An automatic machine tool includes a head having a rotatable spindle and a head-mounted motor for directly driving the spindle. The head is slidably mounted on a main housing by means of a pair of parallel dovetail engagements, the position of one dovetail track member being selectively adjustable transversely along the housing. A main cam inside the housing translates a cam follower secured directly to the head to slide the head in opposition to a bias force exerted against the head by a fluid-operated piston. De-Actuation of the piston permits translation of the head to an extreme position, providing front access to an opening in the housing which renders the cam accessible. Secondary cams are secured to the same shaft which drives the main cam and actuate control switches as the shaft rotates.

3,720,476

REAMING APPARATUS

Clifford A. Taylor, 8315 S. Lockwood Ave., Oak Lawn, Ill. 60607

Filed Oct. 19, 1970, Ser. No. 81,836
Int. Cl. B23b *39/20*
U.S. Cl. 408—71 1 Claim



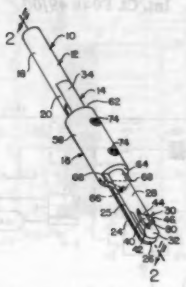
A reaming apparatus is provided in which a circular rotatable turret member underlies a body member carrying an adjustable chuck for holding a reamer. The turret member carries a number of fixtures each of which is adapted for holding a workpiece to be reamed.

3,720,477

DEBURRING TOOL

Dominic J. Rusin, 10041 Chatham Ave., Detroit, Mich. 48239

Filed July 12, 1971, Ser. No. 161,795
Int. Cl. B23b *51/16*
U.S. Cl. 408—226 24 Claims



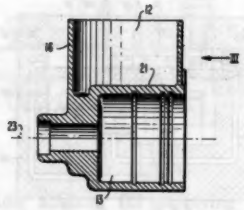
A deburring tool device having an adjustable tension control member embodying chamfer cutting edges and a removable readily-replaceable deburring tool insert, is disclosed. The tension on the tool insert is controlled by the position of the control member upon the tool arbor and the insert. The deburring cutter insert can be provided with a plurality of cutting edges for the face and backside of holes requiring such treatment, to materially increase the tool life of the insert.

3,720,478

PUMP UNIT CONSISTING OF PRESSURE OIL PUMP AND OIL RESERVOIR, ESPECIALLY FOR SERVO-STEERING SYSTEMS

Hans-Joachim M. Furster, and Peter Eisen, both of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed Sept. 22, 1971, Ser. No. 182,766
Int. Cl. F01d *25/24*
U.S. Cl. 415—219 11 Claims



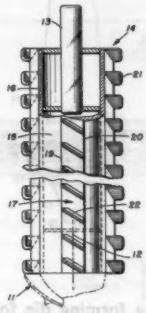
A pump unit consisting of an oil pump space and of an oil reservoir space, especially for servo-steering systems, in which a partition wall formed in one piece with the casting of the housing separates the pump space from the reservoir space; the housing opening of the reservoir space disposed at one housing in the direction of a reference axis extends over the entire housing cross section perpendicular to the reference axis while the housing wall portions of the reservoir space extending along the reference axis, are disposed parallel to the reference axis or in such a manner relative to the reference axis that its wall sections disposed nearer to the housing opening do not have a smaller spacing from the reference axis than directly adjacent wall sections which are disposed further away from the housing opening.

3,720,479

DEVOLATILIZER ROTOR ASSEMBLY

George A. Latinen, deceased, late of Springfield, Mass., by May V. Latinen, administratrix, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,058
Int. Cl. F04d *29/38*
U.S. Cl. 416—198 5 Claims



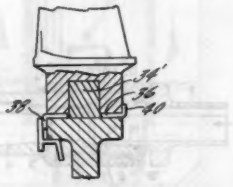
A rotor assembly suitable for use in a devolatilizer for processing relatively viscous materials to separate volatiles therefrom is described. The motor assembly increases vapor separation efficiency and utilizes on its circumferential shaft surfaces axially extending, radially raised flanged portions under a plurality of plow blades adapted to exert axial and circumferential force vectors on all points of cylindrical regions swept by the rotor assembly in operation.

3,720,480

ROTOR CONSTRUCTION

James S. Plowman, Longmeadow, Mass., and Thomas C. Walsh, New Britain, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 29, 1971, Ser. No. 157,969
Int. Cl. F01d *5/32*
U.S. Cl. 416—220 3 Claims



A rotor construction comprising a hub having a plurality of undercut slots defining a plurality of lugs in the periphery thereof, a plurality of filament reinforced composite blades having splayed roots in the slots engaging the lugs and a rein-

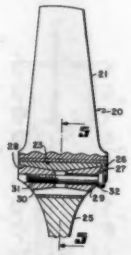
forcing insert disposed in the root portion of the blades extending in a direction transverse to the rotor axis, the ends of the insert engaging opposing walls of adjacent lugs and being of a material sufficiently strong in compression to resist lug bending due to blade loss.

3,720,481

MEANS FOR FORMING AND SECURING TURBINE COMPRESSOR BLADES

Salvatore Motta, Commack, N.Y., assignor to Avco Corporation, Stratford, Conn.

Filed Apr. 28, 1971, Ser. No. 138,241
Int. Cl. F01d 5/32
U.S. Cl. 416—220 **3 Claims**



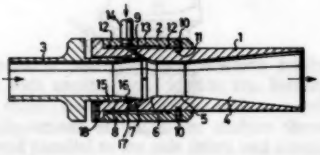
The invention is a forming die for use in fabricating compressor blades from synthetic fibers. Such fibers are spaced a predetermined distance apart and formed into a web which is held in fixed position approximating the shape of the finished blade and then impregnated with a bonding agent to produce an integral blade with reinforced blade portions and root portions. The invention includes means for mounting blades to a rotor by securing a split bushing with oppositely disposed conical bores in the bore of the blade root, inserting and securing the blade root in a keyhole slot in the rotor and by forcing the conical wedges together in said bushing.

3,720,482

DEVICE FOR GENERATING AN AIR SYSTEM BY MEANS OF AN EJECTOR

Peter Tell, 184 00 Akersberga, Sweden, assignor to Aktiebolaget Piab, Danderyd, Sweden

Filed April 13, 1971, Ser. No. 133,583
Claims priority, application Sweden, May 14, 1970, 6615/70
Int. Cl. F04f 5/46, 5/48
U.S. Cl. 417—179 **7 Claims**



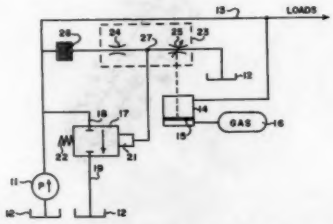
A device for generating an air stream through the venturi tube of an ejector, in which there are a number of channels for supplying air under pressure going through the wall of said venturi tube, and in which there is an inner tube slidably mounted in said venturi tube from a position where the orifices of said channels are substantially closed to a position where said channels are open.

3,720,483

HYDRAULIC POWER SUPPLY SYSTEM

Paul F. Hayner, Lexington, Mass., and David G. Eldridge, Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed July 23, 1971, Ser. No. 165,554
Int. Cl. F04b 49/00
U.S. Cl. 417—304 **2 Claims**



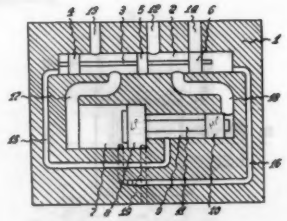
An hydraulic power supply system including a pump, an accumulator and a variable flow rate valve connected to by-pass to the reservoir that portion of the pump output which exceeds current system demand. This is accomplished by varying the flow rate of the by-pass valve in accordance with the quantity of fluid stored in the accumulator.

3,720,484

HYDRAULIC PRESSURE TRANSFORMER

Walter Kirshsieper, Urechmatt 121, 5445 Eggenwil, Switzerland

Filed March 2, 1971, Ser. No. 120,285
Claims priority, application Switzerland, March 4, 1970, 3142/70
Int. Cl. F04b 17/00, 35/00
U.S. Cl. 417—401 **1 Claim**



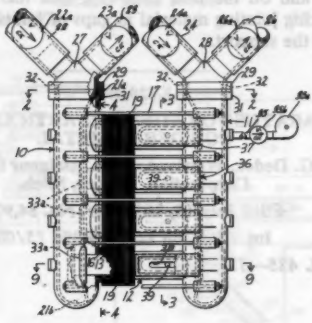
A hydraulic pressure transformer for the delivery of liquid under high and low pressure comprising a first bore for control purposes with three pistons on a common piston rod and at least two concentric bores of different cross sections with two working pistons of different cross sections connected by a common piston rod. The bores are interconnected by passages to effect pressure transformation of the liquid.

3,720,485

ARTIFICIAL HEART

Norman W. Holman, Jr., 104 Hemlock Drive, Auburn, Ala.

Filed July 1, 1971, Ser. No. 158,925
Int. Cl. F04b *43/08, 43/12;* A61f *1/00*
U.S. Cl. 417—413 4 Claims



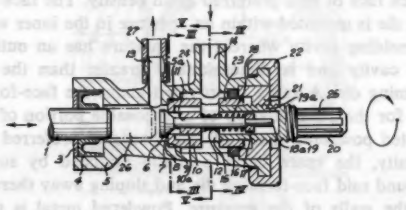
A pump, the construction of which makes it suitable for implantation in the human body, comprising a pair of pumping chambers of flexible material in the form of tubes having one closed end and one open end. A plurality of solenoids is arranged sequentially and alternately, starting adjacent the closed ends of the tubes, inwardly to distort the tubes, thus expelling fluid from the open ends. The solenoids and tubes are encased in a fluid tight housing maintained under sub-atmospheric pressure so that atmospheric pressure acts on fluid in the tubes, thus to return the tubes to expanded position, drawing a fresh supply of fluid after each pumping cycle. Circuitry and switches are provided to operate the solenoids in proper order.

3,720,486

HYDRAULIC ACTUATORS

Pierre J. Jousson and Michel-Antoine Moret, Geneva, Switzerland, assignors to Institut de Recherche WOOG, Geneva, Switzerland

Filed Sept. 21, 1970, Ser. No. 74,102
Claims priority, application Switzerland, Sept. 19, 1969, 14,239/69
Int. Cl. F04b *21/02*
U.S. Cl. 417—440 6 Claims



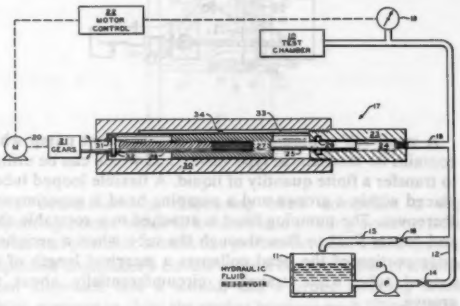
An hydraulic actuator for supplying liquid pressure pulses to a hand appliance for body care comprises a cylinder and reciprocating piston forming a working chamber, an outlet passage connected to the working chamber, an inlet chamber connected to the working chamber through an inlet valve, and pressure regulating means for bypassing a portion of the liquid to the inlet chamber on the pressure stroke of the piston. The pressure regulating means includes a valve holder adjustably mounted in the inlet chamber and movable toward and away from an opening in the working chamber opposite the piston, and the inlet valve is mounted therein inside the annular region of the valve holder which closes the opening. Tapered notches at the front end of the valve holder cooperate with the housing to provide bypass passages of progressively increasing cross-sectional area as the valve holder is moved away from the opening, and are designed to provide a linear reduction in liquid pressure in the outlet passage.

3,720,487

PRESSURE CONTROL

Bruce F. Wiley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 4, 1971, Ser. No. 195,665
Int. Cl. F16l *55/04*
U.S. Cl. 417—572 5 Claims



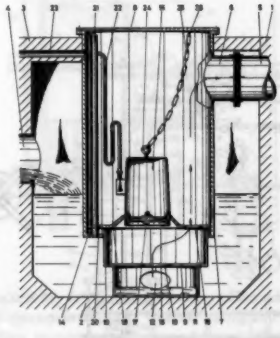
The pressure in a closed hydraulic system is maintained constant by adjustment of the volume of a variable-volume chamber in communication with the system. This adjustment is made by a servo unit in response to measured pressure changes in the hydraulic system.

3,720,488

WELL PUMPING APPARATUS FOR POLLUTED WATER

Louris Bood, Rodenrijs, Netherlands, assignor to Mowid Anstalt, Vaduz, Liechtenstein

Filed Sept. 22, 1971, Ser. No. 182,806
Int. Cl. F04d *29/40*
U.S. Cl. 417—360 5 Claims



A well pumping apparatus for polluted water is disclosed wherein a housing portion is fixedly arranged within the wall. A removable portion, comprising an electric motor, a motor housing and an impeller, is arranged to sealingly engage the

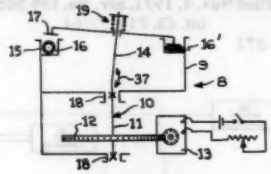
fixed housing portion with the well to define a pumping chamber.

3,720,489

SELF CONTAINED FLUID PUMP DEVICE

Dick Raper, 3107 Shell Street, Midland, Tex.

Filed April 2, 1971, Ser. No. 131,030
Int. Cl. F04b *43/08, 35/04;* H01m *1/04*
U.S. Cl. 418—45 9 Claims



A small self contained positive displacement pump which contains no mechanical type valves, and which can be utilized to transfer a finite quantity of liquid. A flexible looped tube is placed within a groove and a pumping head is superimposed thereover. The pumping head is attached to a rotatable shaft and causes fluid to flow through the tube when a peripheral edge portion of the head collapses a marginal length of the looped tube while traveling circumferentially about the groove.

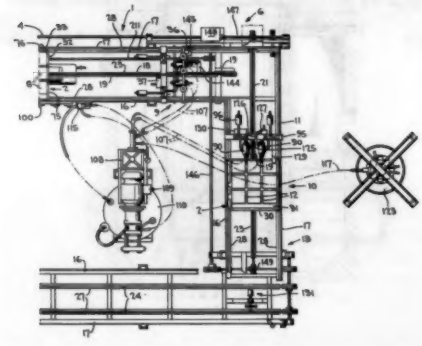
The pumping head is biased into proper operative position by a combination fastener means and pressure regulator device. The pumping head is loosely captured by a portion of the main body of the pump by means of a lost motion coupling in a manner to prevent the tube from creeping longitudinally of the groove.

3,720,490

APPARATUS FOR JOINING WALL TILES

Luc Gaston de Vinck, Hunsberg, Merchtem, Belgium, assignor to Villeroy & Boch Keramische Werke KG, Mettlach, Germany

Filed Mar. 24, 1969, Ser. No. 809,651
Claims priority, application Belgium, Mar. 26, 1968, 56,336
Int. Cl. B29c *27/00*
U.S. Cl. 425—3 36 Claims



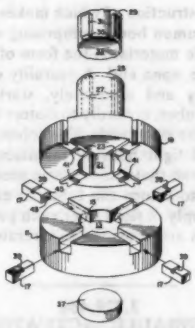
The specification describes an improved title structure in the form of a sheet of tiles connected together at their edges ready for mounting on a wall. The specification also described an apparatus for assembling tiles to form such sheets. The apparatus comprises a conveying system which is rectangular in plan and on one side is provided with means for ejecting tiles on to a rectangular support on the conveying system. On this same side of the conveying system and on the next following side there are means for placing jointing material in gaps or joints between the tiles on the support.

3,720,491

APPARATUS FOR FORMING ARTICLES FROM POWDERED METAL

Frank G. Dedek, Westland, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 15, 1970, Ser. No. 54,971
Int. Cl. B30b *11/04;* B29d *15/00*
U.S. Cl. 425—78 10 Claims



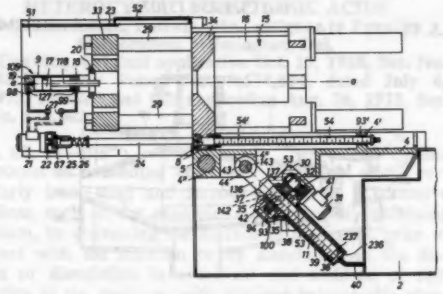
An apparatus for forming a unitary article, such as a printing disk, from powdered metal wherein at least one given face of the article is required to have a preferred grain density. A die, complementary in area and configuration to the given face, is provided for forming the given face of said preferred grain density. The face-forming die is mounted within an aperture in the inner wall of a molding cavity wherein the aperture has an outlet on the cavity and is dimensionally greater than the face-forming die. A space is provided about the face-forming die for the accumulation of a disposable portion of compacted powdered metal of less than said preferred grain density, the space being partially bounded by surfaces around said face-forming die and sloping away therefrom to the walls of the aperture. Powdered metal is placed in the mold and forced against the face-forming die and into the provided space, thereby forming a unitary article having a preferred grain density at one or more given face while simultaneously providing for the accumulation of the disposable portion of less dense metal which may be removed in subsequent operations. The molded article is sintered to relieve work-hardening and then restruck to insure said preferred grain density and to improve facial definition. The restruck article may be subjected to further heat-treating operations depending on the desired physical characteristics required of the finished article.

3,720,492

MACHINE FOR PROCESSING SYNTHETIC MATERIALS

Karl Hehl, 183 Siedlung, Lossburg, Wurttemberg, Germany

Filed Apr. 6, 1971, Ser. No. 131,666
Claims priority, application Germany, Apr. 25, 1970, P 20 20 336.5
Int. Cl. B28b 17/00
U.S. Cl. 425—107 10 Claims



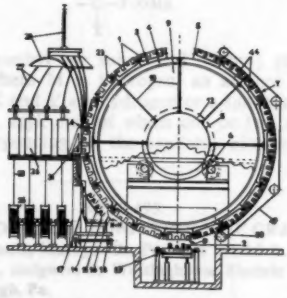
An injection molding apparatus having a base and injection mold clamping means which is displaceable in its axial direction as well as pivotal by at least 90° with respect to the base by means of a motor-driven turning assembly having a screw and nut drive. The mold clamping means is moved axially by means of a motor-driven screw and nut drive.

3,720,493

MACHINE FOR THE MANUFACTURE OF REINFORCED CONCRETE OR PRESTRESSED CONCRETE ELEMENTS

Mircea Borcoman, and Virgil Ciufu, both of Paris, France, assignors to said Borcoman, by said Ciufu 75 Paris, France

Filed July 21, 1970, Ser. No. 56,918
Claims priority, application France, July 25, 1969, 6925511
Int. Cl. B28b 23/04
U.S. Cl. 425—111 10 Claims



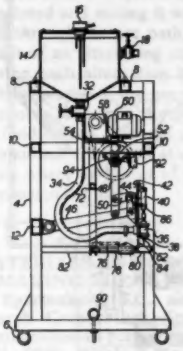
The elements are formed in molds. The machine includes means adapted to displace the molds, in a manufacturing circuit, by rotation, stepwise or continuously, around the horizontal axis, and installations for cleaning the molds, oiling the molds, assembling cores in the molds, concreting, continuous heat treatment of the concrete contained in the molds, demolding and removal of the finished concrete elements arranged outside and in the vicinity of the path followed by the molds and synchronized with the rotation of the molds. The machine is useful for the manufacture of posts, stakes, beams, planks, etc.

3,720,494

APPARATUS FOR CASTING CERAMIC ARTICLES

George Terah Gough, Newcastle, England, assignor to Gouch and Company (Hanley) Limited, Hanley, Stoke-on-Trent, England

Filed July 9, 1971, Ser. No. 161,216
Int. Cl. B28c 7/16
U.S. Cl. 425—147 8 Claims



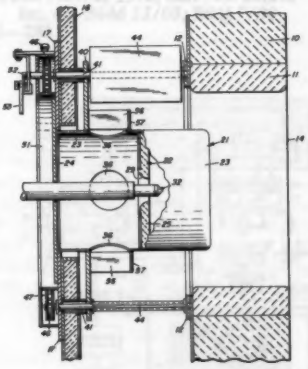
An automatic slip dispensing head comprises a slip dispensing nozzle which is lowered into a filling position from a retracted position, conductive probes between which the slip dispensed completes a circuit when a desired depth of slip has been dispensed into a mould, and a probe cleaning brush which operates to clean the probes between each filling operation.

3,720,495

BURNER ASSEMBLY FOR LIQUID FUEL

John Smith Zink; Hershel Goodnight, and Robert D. Reed, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed April 5, 1971, Ser. No. 131,145
Int. Cl. F23m 9/00
U.S. Cl. 431—184 2 Claims



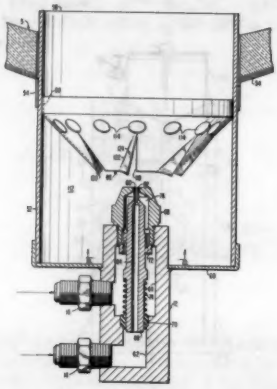
A burner assembly for the combustion of liquid fuel wherein a plurality of circumferentially spaced vanes are adjustable to control whirling movement of secondary air that moves over the exterior of a regenerative tile and to an assembly that includes interceptor vanes which prevent circumferentially moving air from moving into the regenerative tile which forms a part of the burner assembly.

3,720,496

FUEL BURNER

Eugene C. Briggs, Dayton, Ohio, assignor to Koehring Company, Milwaukee, Wis.

Filed March 29, 1971, Ser. No. 128,734
Int. Cl. F23d 15/02
U.S. Cl. 431—353 7 Claims



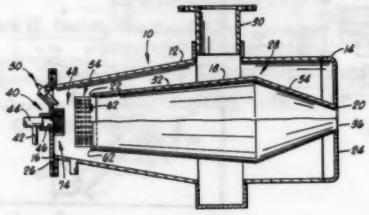
A burner nozzle projects a mixture of fuel oil and air into a burner tube fitted with an open ended flame retention head having the general configuration of a frustum of a cone the small end of which faces the nozzle and the large end of which abuts the interior wall of the burner tube. The zone on the nozzle side and around the circumference of the conical flame retention head is supplied with air under pressure. Slots each having an outwardly inclined vane adjacent one of its margins extend longitudinally of the head and open at both the periphery and the small end of the head to direct air from the pressure zone into an axially swirling pattern of motion within the head. Additional openings of circular configuration are disposed in a ring about the conical head in the vicinity of but spaced from its large end, and the slots terminate at individual ones of these circular openings. The openings provide additional passages for directing air from the pressurized zone toward the axis of the head.

3,720,497

GAS BURNER APPARATUS

Edwin M. Arenson, El Reno, Okla., assignor to Black, Sivalls & Bryson, Inc., Oklahoma City, Okla.

Filed June 3, 1971, Ser. No. 149,716
Int. Cl. F23d 15/02
U.S. Cl. 431—114 10 Claims



An improved gas burner apparatus of the type having a hollow inner liner supported within an outer shell, such that combustion air injected between the inner liner and the outer shell travels in a generally helical path to the rear end portion of the inner liner and thoroughly mixes with fuel injected into the end of the outer shell, the fuel and combustion air being mixed and burned generally within the inner liner. The improved gas burner apparatus of the present invention includes a noise abatement apparatus secured to the rear end of the inner liner to diffuse a portion of the combustion air thereby substantially eliminating undesirable noise encountered during operation of the gas burner apparatus, and a flame protection apparatus encompassing the opening for injecting fuel into the outer shell to diffuse a portion of the combustion air thereby preventing the pilot flame from being blown-out.

CHEMICAL

ERRATUM

For Class 8—115.7 see:
Patent No. 3,720,500

3,720,498
INHIBITING CORROSION WITH NITROGEN-HETEROCYCLIC PHOSPHONIC ACIDS

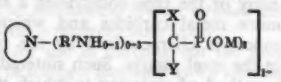
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Oct. 17, 1968, Ser. No. 768,509, now Patent No. 3,674,804, dated July 4, 1972. Divided and this application Aug. 26, 1971, Ser. No. 175,362

Int. Cl. C23f *11/16*

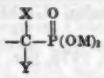
U.S. Cl. 21—2.5 **14 Claims**

Process of inhibiting corrosion of metals, most particularly iron, steel and ferrous alloys, in a corrosive medium, such as, for example, a corrosive oil-containing medium, by contacting the surface of the metal, prior to contact with the medium or by dissolution in the medium or dissolution in a solvent and addition of said solution to the medium, with nitrogen-heterocyclic phosphonic acids and derivatives thereof characterized by aminomethyl (or substituted methyl) phosphonic acids or derivatives thereof bonded directly or indirectly, i.e., through a N-side chain to the nitrogen atom in the heterocyclic ring, for example those containing in the molecule at least one of the following units:



where

represents a heterocyclic ring having a nitrogen atom on the ring; $R'NH_{0-1}$ represents an amino-terminated side chain attached directly to the ring nitrogen (which side chain may or may not be present); and



represents a methyl (or substituted methyl) phosphonic acid group where M is hydrogen, an alcohol or a salt moiety, and X and Y are hydrogen or a substituted group such as alkyl, aryl, etc., of which one or two units may be present depending on the available nitrogen bonded hydrogens.

3,720,499
PROCESS FOR PRODUCING PYROLYTIC GRAPHITE

Chikara Hirayama, Murrysville, Pa., and Daniel A. Maniero, Racine, Wis., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 533,004, March 9, 1966, abandoned. This application March 6, 1970, Ser. No. 17,132

Int. Cl. C01b *31/04*

U.S. Cl. 423—448 **8 Claims**

A hydrocarbon is pyrolyzed to produce a stream of gas having a preselected average gas temperature. An electric arc heater may be employed having an elongated exhaust nozzle, which may be fluid cooled or not fluid cooled, and carbon in the form of soot and/or crystalline graphite may be deposited on the inside wall of the exhaust nozzle, depending on the temperature difference between the gas and the inside surface of the nozzle. Alternatively, an object to be coated with carbon in the form of soot and/or pyrolytic graphite may be mounted in the stream of gas exhausted from the nozzle. The processes may be carried on at atmospheric pressure. The desired average gas temperature may be obtained by adjusting arc power, adjusting the mass flow rate of the hydrocarbon gas, passing a selected portion of the hydrocarbon gas through the arc path to be pyrolyzed and mixing it with another selected portion not passed through the arc path, or utilizing instant variations in current of an alternating current source as the current varies during each alternation between zero and a peak value. An object placed in the gas stream to be coated may be composed of a refractory metal, a refractory nonmetal, or may be fluid cooled. Vacuum pump means is used where desired to maintain a pressure at or near atmospheric pressure in the area where an object to be coated comes in contact with the stream of hot gas.

3,720,500
TEXTILE MATERIALS AND PROCESSES FOR MAKING THE SAME

Donald J. Gale, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

No Drawing. Continuation-in-part of application Ser. No. 77,284, Dec. 21, 1960, which is a continuation-in-part of abandoned application Ser. No. 863,217, Dec. 31, 1959. This application Oct. 12, 1970, Ser. No. 80,206

Int. Cl. D06m *13/28, 13/54, 15/54*

U.S. Cl. 8—115.7 **26 Claims**

Cellulosic materials, particularly textile materials consisting of cellulosic fibers or blends of cellulosic and noncellulosic fibers, are treated with compounds containing sulfato ethyl sulfone groups which function as vinyl sulfone group precursors. The compounds may be applied to the cellulosic material either concomitantly with thermosetting resins or subsequent to modification of the cellulosic material with thermosetting resins.

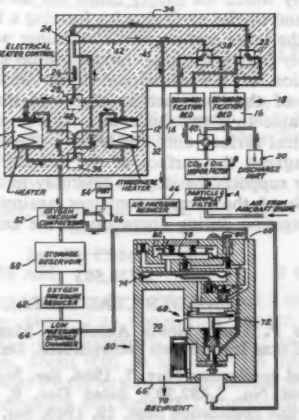
3,720,501
SYSTEM FOR ENRICHING INHALABLE AIR WITH OXYGEN

Robert L. Cramer and John W. Henneman, Davenport, Iowa, assignors to The Bendix Corporation

Filed Nov. 2, 1970, Ser. No. 86,240

Int. Cl. B64d *13/08*; B01j *7/00*

U.S. Cl. 23—281 **6 Claims**



A system for providing oxygen enriched air to a recipient. Contaminants carried by air from an external source

are removed by a filter member. This filtered air is transported to a humidification chamber where the water vapor is reduced to a desired amount. The temperature of the air and crystals of barium oxide are simultaneously raised to a desired temperature. This heated air is then pressurized and brought into contact with the barium oxide where some of the air will react with the barium oxide to form barium peroxide. The unreacted air and nitrogen given up by the reaction is returned by a conduit to the humidification chamber where excess water vapor is picked up and returned to the atmosphere. After a predetermined time, communication of the pressurized air with the barium oxide is prevented and the pressure around the barium peroxide is reduced by a vacuum. When the pressure has been reduced sufficiently, the barium peroxide will revert to barium oxide by releasing oxygen. The released oxygen is condensed and stored in a reservoir. A dilution regulator has one inlet port connected to the conduit carrying the unreacted air and nitrogen and a second inlet port connected to the oxygen reservoir. A valve member located in the dilution regulator, which is responsive to a change in altitude, will proportion the oxygen with the unreacted air to maintain the physiological level for the recipient.

3,720,502

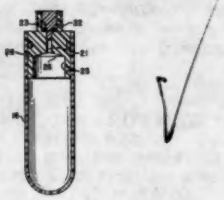
CENTRIFUGE TEST TUBE STOPPER

Lee Gropper, Los Altos Hills, and Lawrence E. Stahl, San Mateo, Calif., assignors to Beckman Instruments, Inc.

Filed Dec. 21, 1970, Ser. No. 100,005

Int. Cl. B01l *3/00*

U.S. Cl. 23—292 **3 Claims**



An easily assembled and disassembled centrifuge sample holder including a sample container and a stopper assembly which fits snugly inside the mouth of the container and carries an O-ring for forming a liquid-tight seal about the inner surface of the container with the stopper assembly having its outer dimensions no greater than the dimension of the cylindrical inner surface inside the mouth of the container so that said stopper assembly is movable to a multitude of positions along the inner cylindrical surface until the lower surface of the stopper abuts against the surface of the sample solution which thereby supports the stopper assembly in the direction of the axis of the sample container against the forces of centrifugation during operation of the centrifuge.

3,720,503

SOLDER CLAD METAL

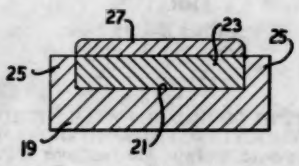
George P. Trost, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Original application Nov. 7, 1966, Ser. No. 592,579, now Patent No. 3,482,303, dated Dec. 9, 1969. Divided and this application Sept. 19, 1969, Ser. No. 871,230

Int. Cl. B32b *15/18*

U.S. Cl. 29—191.6 **1 Claim**

There is provided a three-component composite metal strip material from which articles to be soldered can be punched, comprising a strip of readily solderable metal solid-phased bonded to a strip of nonsolderable metal,



and a layer of solder adhered to the exposed surface of the readily solderable metal which is inlaid in a groove in the nonsolderable metal.

3,720,504

SINTERED STEEL-BONDED HARD METAL ALLOY AND A METHOD OF PREPARING THE SAME

Fritz Frehn, Krefeld, Germany, assignor to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,497

Claims priority, application Germany, Oct. 24, 1969, P 19 53 481.7

Int. Cl. B22f *1/00*

U.S. Cl. 29—182.7 **7 Claims**

A sintered alloy of the type comprising a steel matrix and one or more metal carbides and which has high abrasion resistance, is characterized by the presence of free graphite in the steel matrix. Such sintered alloys are obtained by a method of sintering in which the sintered alloys are maintained for an extended period of time at sintering temperatures followed by controlled cooling.

3,720,505

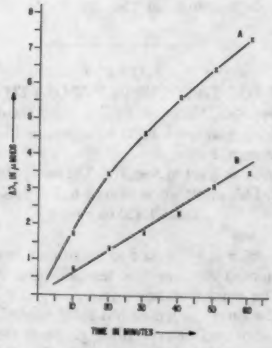
METHOD OF FORMING A PHOSPHATE GLASS TO INOCULATE WATER

Hans Vogel, Ludwigshafen-Mundenheim, Germany, assignor to Gebr. Giulini GmbH, Ludwigshafen am Rhine, Germany

Filed Dec. 9, 1970, Ser. No. 96,509

Int. Cl. C03b *19/10*

U.S. Cl. 65—21 **7 Claims**



A method for inoculating water with P_2O_5. A phosphate glass melt containing Na_2O, CaO, and MgO and

having a base to acid ratio greater than 1.5:1.0 is brought to a temperature of at least 1200° C. and then cooled to form a glass. This glass is placed in the water to be inoculated, where the P_2O_5 goes slowly into solution.

3,720,506

PROCESS FOR SEPARATING FERROPHOSPHORUS AND PHOSPHORUS FURNACE SLAG FROM ONE ANOTHER IN A CASTING BED

Fritz Muller, Knapsack near Cologne; Hugo Werner, Hermulheim near Cologne; Werner Nolden, Bruhl, and Ursus Thummler, Hurth near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Koln, Germany

Filed July 8, 1970, Ser. No. 53,095

Claims priority, application Germany, July 23, 1969, P 19 37 381.0

Int. Cl. C22b *7/04*

U.S. Cl. 75—24 1 Claim

Process for separating ferrophosphorus and phosphorus furnace slag from one another in, and removing them from, a casting bed receiving a ferrophosphorus/phosphorus furnace slag-mixture. The mixture is poured into the casting bed, allowed to remain therein for a period of 2 to 2.5 hours and then cooled; after a period of between 4 and 5 hours after pouring, the phosphorus furnace slag is crushed from above by subjecting it to mechanical breaking stresses or impact stresses and the crushed slag is removed from the downstream end of the casting bed; and, after a period of between 5 and 6 hours after pouring, the ferrophosphorus is crushed away from above by subjecting it to mechanical impact stresses and the crushed ferrophosphorus is removed from below.

Apparatus for use in carrying out the process. The apparatus may be a digger provided with a telescopic arm which is arranged so as to be rotatable around its longitudinal axis and has interchangeable crushing means, slag removing means or ferrophosphorus removing means mounted on the head end of the said telescopic arm.

3,720,507

COPPER-LEAD ALLOY

Charles E. Lundin, Evergreen, Colo., assignor to Colorado Springs National Bank, Colorado Springs, Colo.

Filed Aug. 10, 1970, Ser. No. 62,338

Int. Cl. C22c *9/08, 11/00*

U.S. Cl. 75—135 12 Claims

A method of making a homogeneous copper-lead alloy having a fine and even dispersion of the phases, and the alloy and its uses, wherein the method comprises adding an effective amount of a homogeneity promoter to a mixture of molten lead and copper. The promoter comprises elemental carbon and a rare earth compound. An example of the rare earth compound is a rare earth fluorocarbonate such as cerium fluorocarbonate.

3,720,508

ALUMINUM ALLOY

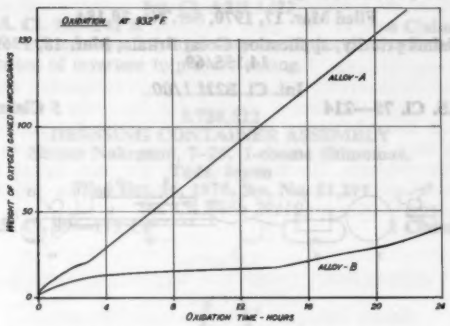
Andrew J. Brock, Cheshire, and Michael J. Pryor, Woodbridge, both of Conn., assignors to Olin Corporation

Filed June 1, 1971, Ser. No. 148,582

Int. Cl. C22c *21/02*

U.S. Cl. 75—147 3 Claims

This disclosure teaches a novel aluminum alloy having high resistance to oxidation during hot rolling, improved surface appearance and improved bright anodizing characteristics and the method of processing same. The alloy contains from 0.5 to 3 percent magnesium, from 0.02 to 0.5 percent silver, from 0.001 to 0.2 percent iron, from 0.001 to 0.15 percent silicon,



balance essentially aluminum, wherein the silver is substantially dissolved in solid solution in the matrix.

3,720,509

NICKEL BASE ALLOY

Wilbert P. Danesi, Deerfield, Ill., and Rudolf H. Thielemann, Portland, Oreg., assignors to Martin Metals Company, Wheeling, Ill.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,013

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 4 Claims

The present invention contemplates nickel-base alloys consisting in percent by weight essentially of about 0.1% to about 0.25% carbon, about 7.5% to about 10% chromium, about 0.75% to about 2% titanium, about 5% to about 6.25% aluminum, about 8% to about 12% cobalt, about 8% to about 12% tungsten, about 0.8% to about 2.5% hafnium, about 0.002% to about 0.2% boron, up to about 0.15% zirconium, about 1.5% to about 3.5% tantalum, about 0.2% to about 0.9% molybdenum, with the balance being essentially nickel.

3,720,510

COMPRESSION RESISTANT ZINC BASE ALLOY WITH HIGH WEAR RESISTANCE

Takehiro Isobe, Yama, Toshio Shimazu, Tokyo, and Koji Ogawa, Yukio Arake, Aizu Wakamatsu, and Tatsuji Hashimoto, Yama, Japan, assignors to Nisso Smelting Co., Ltd., Tokyo, Japan

Filed July 22, 1971, Ser. No. 165,016

Claims priority, application Japan, July 27, 1970, 45/65,023

Int. Cl. C22c *17/00*

U.S. Cl. 75—178 AM 2 Claims

Zinc base alloy consisting by weight of about 2 to about 15% aluminium, about 2 to about 10% copper, about 0.01 to about 0.15% magnesium, about 0.02 to about 0.15% beryllium, about 0.01 to about 0.05% titanium, about 0.01 to about 3% silver and the balance of zinc, has superior wear resistance and superior compression resistance extending to about 80 to about 170 kg./mm.^{2} of compressive strength and about 32 to about 43 kg./mm.^{2} of proof stress on compressive deformation at about 0.2% offset.

3,720,511

PRODUCTION OF METAL STRIP FROM POWDERED METAL

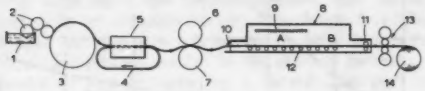
Idwal Davies and Alan G. Harris, Swansea, Wales, assignor to The British Iron and Steel Research Association, London, England

Filed Mar. 17, 1970, Ser. No. 20,184

Claims priority, application Great Britain, Mar. 18, 1969, 14,155/69

Int. Cl. B22f 1/00

U.S. Cl. 75—214 5 Claims



A process is provided for rolling metal strip, particularly iron or iron alloy strip, directly from powdered metal utilising the technique of batch sintering a green strip or a partially sintered strip in coiled form in a batch annealing furnace at relatively low temperatures. In a preferred embodiment a green strip is formed by compacting a layer found from a metal/binder composition, partially sintering the green strip by passage through an in-line furnace, coiling the partially sintered strip and sintering it in a batch annealing furnace at a temperature substantially below that of the in-line furnace.

3,720,512

CLOSED DIE FORGING METHOD OF MAKING HIGH DENSITY FERROUS SINTERED ALLOYS

Tetsuro Yamaguchi; Yuichi Saito, both of Urawa-shi, Saitama-ken; Yoshio Nishino, and Inove Shunichi, both of Omiya-shi, Saitama-ken, all of Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 6, 1970, Ser. No. 35,183

Int. Cl. B22f 3/12

U.S. Cl. 75—221 2 Claims

Closed die forging method of high density ferrous sintered alloys, wherein an mixture iron based and added components is preformed, then the preform is presintered at a predetermined temperature, subsequently rapidly heated for a short period and finally hot-formed.

3,720,513

MIGRATION IMAGING METHOD INVOLVING SOLVENT WASH-AWAY OF UNMIGRATED PARTICLES

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 851,872, Aug. 21, 1969, Pat. No. 3,648,607. This application March 31, 1970, Ser. No. 24,148

Int. Cl. G03g 5/00, 13/20, 13/22

U.S. Cl. 96—1 R 26 Claims

A migration imaging system wherein an imaging member typically comprising a softenable layer, migration marking material, and a supporting substrate, is provided, an electrical latent image is formed thereon, and the latently imaged member is softened whereby the marking material migrates in depth in the softenable layer in imagewise configuration toward the substrate. This member is then more fully developed by substantially uniformly recharging in the presence of activating electromagnetic radiation and by removing the background and residual materials.

3,720,514

ELECTROPHOTOGRAPHIC PAPER HAVING AN INORGANIC COLLOIDAL OXIDE COATING

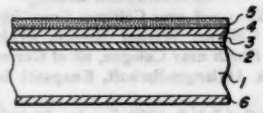
Satoru Honjo, and Yasuo Tamai, both of Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed July 6, 1970, Ser. No. 52,311

Claims priority, application Japan, July 17, 1969, 44/56668

Int. Cl. G03g 5/00

U.S. Cl. 96—1.5 16 Claims



An electrophotographic paper is provided which comprises a waterproof paper treated with an inorganic colloidal oxide dispersion having an electroconductive layer coated over the treated surface and a photoconductive layer residing on the surface of the electroconductive layer.

3,720,515

MICROELECTRONIC CIRCUIT PRODUCTION

Charles C. Stanley, Canoga Park, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 3,435, Jan. 16, 1970. This application Oct. 20, 1971, Ser. No. 190,834

Int. Cl. G03c 5/00, 11/00

U.S. Cl. 96—38.4 6 Claims

Microelectronic circuits are produced by evaporating a photosensitive compound such as a silver halide onto a chip which is then exposed to radiation such as light, or an electron beam whose motion may be controlled by a computer or similar device. The chip is then developed leaving behind the metallic conductive circuit, and the undeveloped portion is removed preferably by heating.

3,720,516

SILVER HALIDE EMULSIONS STABILIZED WITH MANGANOUS SALTS

Robert Newell Woodward and Nelson Robert Sidebotham, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 15, 1971, Ser. No. 189,745

Int. Cl. G03c 1/30

U.S. Cl. 96—110 11 Claims

Processes for precipitating silver halide grains in the presence of a rhodium salt and stabilizing emulsions comprising said grains with (1) a water soluble manganous salt or (2) a combination of said water soluble manganous salt and cadmium bromide are disclosed.

Photographic emulsions and elements containing these silver halide grains are ecologically desirable and are particularly useful in providing unexpected and improved sensitometric properties, particularly upon storage.

3,720,517

PREPARATION OF A FERMENTED MALT CHAMPAGNE

Vincent S. Bavisotto, Mahtomedi, and Jerome S. Haggenmiller, St. Paul, Minn., assignors to Theodore Hamm Brewing Co.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,521

Int. Cl. C12g 1/06

U.S. Cl. 99—35 5 Claims

A naturally brewed beverage having a champagne taste prepared by adding a sugar and cold water dispersible edible organic acid to a yeast fermented boiled aqueous medium containing a fermentable carbohydrate, a food

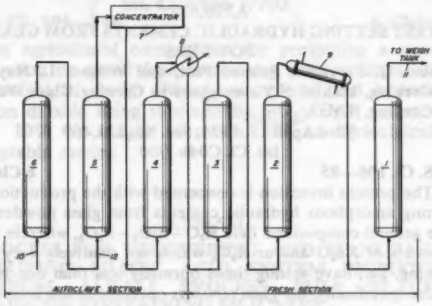
grade material having a high soluble protein or amino acid content, malt and hops or hops extract.

3,720,518

PROCESS FOR THE MANUFACTURE OF A CONCENTRATED COFFEE PRODUCT

Gustavo M. Galdo, River Edge, and Irwin L. Adler, River Vale, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 23, 1971, Ser. No. 117,991
Int. Cl. A23f 1/08
U.S. Cl. 99—71 25 Claims



A process whereby a high concentration coffee extract containing about 30 to 40% solids by weight of the extract can be produced in an ordinary percolator set without incurring any significant loss of extraction yield. The key step in the process of this invention is the use of intercolumn concentration prior to the fresh stage in a percolator set. The concentrated extract is advantageously used in further processing to produce a soluble coffee product.

3,720,519

FLAVOR POTENTIATOR COMPRISING DRIED, YEAST FERMENTED WHEY AND METHOD OF USE

Robert M. Hamilton, and Salvatore F. Ziccarelli, both of Downers Grove, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Feb. 16, 1971, Ser. No. 115,752
Int. Cl. A23l 1/26
U.S. Cl. 99—140 N 15 Claims

Flavor potentiators for use in foods and food products. The potentiators are dried yeast fermented whey of low moisture content and the potentiators are mixed with food at levels up to 10 percent by weight. After the potentiators are mixed with foods the potentiators are, preferably, in a hydrated state.

3,720,520

PREPARATION OF BLEU CHEESE FLAVORED PRODUCT

Anthony J. Luksas, Chicago, Ill., assignor to Beatrice Food Co., Chicago, Ill.

Continuation-in-part of Ser. No. 743,050, July 8, 1968, abandoned. This application Nov. 10, 1971, Ser. No. 197,481
Int. Cl. A23l 1/26
U.S. Cl. 99—140 R 5 Claims

A bleu cheese flavor is produced by growing *Penicillium roqueforti* with aeration in an aqueous medium of sodium caseinate and fat for at least 24 hours at 15° to 40°C.

3,720,521

PREVENTION OF CAKING OF POWDERED SUGAR

Tokuji Tanaka and Hideaki Hayashi, Tokyo, Japan, assignors to Sankyo Company Limited

No Drawing. Filed Feb. 9, 1971, Ser. No. 114,030
Claims priority, application Japan, Feb. 18, 1970, 45/14,351
Int. Cl. A23l 1/22
U.S. Cl. 99—141 R 4 Claims

Powdered sugar having incorporated therein a sufficient amount of invertase to prevent caking.

3,720,522

DRESSING CONTAINER ASSEMBLY

Shizuo Nakagami, 7–26, 1-chome Shimomae, Toda, Japan

Filed Oct. 16, 1970, Ser. No. 81,291
Int. Cl. B65b 29/10
U.S. Cl. 99—171 CP 2 Claims

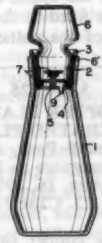
This invention relates to the construction of a capsule type dressing container assembly comprising an integral combination of a container containing salad oil and a container containing a spice-vinegar mixture, in which when it is desired to serve dressing, a partition between said containers is broken away with a single finger to allow inter-mixture of the contents in the containers. The container assembly is then shaken to sufficiently mix up the contents, whereby desired salad dressing is prepared instantly.

3,720,523

DRESSING CONTAINER ASSEMBLY

Shizuo Nakagami, 7–26, 1-chome Shimomae, Toda, Japan

Filed Oct. 16, 1970, Ser. No. 81,292
Int. Cl. B65b 29/10
U.S. Cl. 99—171 CP 6 Claims



The present disclosure relates to a container assembly designed to allow instant preparation of fresh dressing and immediate serving thereof on the table. According to the invention, a lower container containing salad oil

and an upper container containing a spice-vinegar mixture are integrally joined. A cutter assembly is fixedly provided at the opening portion or mouth of the oil container and has a piston erected at the center of the base of said assembly. A seal is tightly secured at the end of the opening portion or mouth of the vinegar container and a cylinder is provided at the center of said seal. The mouth of the upper container is not fixed to the inner face of the cutter assembly but is arranged to be freely rotatable. The wall portion of the base of the seal that surrounds the cylinder is made very thin so that when the upper container is pressed into the lower container, said thinned portion is broken to remove the partition between said containers, thus allowing the intermixture of their contents. The mixed contents are then shaken for better mixing thereof, whereby salad dressing for one meal is readily prepared.

3,720,524
CONTAINER ASSEMBLY WITH FRANGIBLE MIXING MEANS

Shizuo Nakagami, 7-26, 1-chome Shimomae, Toda, Japan

Filed Oct. 16, 1970, Ser. No. 81,293
Int. Cl. B65b *29/10*
U.S. Cl. 99—171 B 5 Claims

The present disclosure relates to a container assembly designed to allow impromptu preparation and serving of fresh salad dressing on the table. A lower container containing salad oil and an upper container containing a spice-vinegar mixture are integrally joined. A seal cutter assembly is provided in the inside of the opening portion of the oil container, while a seal is secured in the inside of the opening portion of the upper container. The mouth of the upper container is adapted to be rotated while being kept in a closely fit engagement in the mouth of the oil container. When the containers are rotated relative to each other, the seal in the upper container is readily cut away by the seal cutter fixed to the lower container, thus allowing intermixture of the materials in the containers.

3,720,525
ELECTROLESS COPPER PLATING SOLUTIONS WITH ACCELERATED PLATING RATES

Nathan Feldstein, Kendall Park, and Joel Alan Weiner, Cranbury, N.J., assignors to RCA Corporation

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,300
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 4 Claims

The rate of plating copper onto an active metallic surface of a substrate from an electroless copper plating solution is enhanced by adding to the plating solution an ionic compound consisting of either an acetate, a nitrate, an oxalate, a lactate, a chloride, a tartrate, a formate, a phthalate, a tungstate, a molybdate, a chlorate, a perchlorate, a citrate, a malonate, or mixtures thereof.

3,720,526
GLASS-CERAMIC BODY

David A. Duke, Corning, and John F. MacDowell, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 452,388, April 30, 1965, abandoned. This application Aug. 12, 1971, Ser. No. 171,343
Int. Cl. C03c *3/22*
U.S. Cl. 106—39.6 2 Claims

This invention relates to the manufacture of dense, fine-grained glass-ceramic articles having compositions within the Na_2O and/or K_2O-Al_2O_3-SiO_2 field which are nucleated with TiO_2 and/or ZrO_2 and/or SnO_2 and wherein the principal crystal phase is a nepheline-type crystal, i.e., a nepheline and/or kaliophilite solid solution.

3,720,527
FAST SETTING HYDRAULIC CEMENTS FROM GLASS POWDERS

Robert J. Farrauto, Painted Post, and William L. Haynes, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed April 15, 1971, Ser. No. 134,409
Int. Cl. C04b *7/00*
U.S. Cl. 106—85 6 Claims

The present invention is concerned with the production of strong amorphous hydraulic cements from glass powders in the general composition field R_2O—SiO_2—P_2O_5, wherein R_2O consists of Na_2O and/or K_2O, which are relatively very fast setting, i.e., have setting times normally less than one hour. More specifically, the glass powders operable in this invention consists essentially, by weight on the oxide basis, of about 15–85% R_2O, 10–80% SiO_2, and 3–20% P_2O_5.

3,720,528
CEMENT HAVING IMPROVED COLOR

Russell T. Jordan, Denver, Colo.
(180 S. Xenia St., Enon, Ohio 45323)

No Drawing. Continuation-in-part of application Ser. No. 576,816, Sept. 2, 1966. This application May 18, 1970, Ser. No. 38,546
Int. Cl. C04l *7/02*
U.S. Cl. 106—90 15 Claims

Colored cements having improved color and reduced efflorescence are prepared by adhering to a portion of the surface of a majority of the unset cement particles a surface-tension reducing agent and/or a dispersant which effects dispersion by establishing a common charge on each of the cement particles without substantial reduction in the size of the particles. Preferably, the organic matter is adhered to the cement particles by impinging a stream of one of the particles on a stream of the other and preferably both a surface-tension reducing agent and a dispersant are utilized.

3,720,529
CEMENTS

Russell T. Jordan, Denver, Colo.
(180 S. Xenia St., Enon, Ohio 45323)

No Drawing. Continuation-in-part of application Ser. No. 576,835, Sept. 2, 1966. This application May 18, 1970, Ser. No. 38,603
Int. Cl. C04l *7/02*
U.S. Cl. 106—90 9 Claims

Cements having a variety of improved properties including reduced efflorescence and improved appearance when molded can be prepared by adhering to a portion of the surface of a majority of the unset cement particles a surface-tension reducing agent and/or a dispersant which effects dispersion by establishing a common charge on each of the cement particles without substantial reduc-

tion in the size of the particles. Preferably, the organic matter is adhered to the cement particles by impinging a stream of one of the particles on a stream of the other and preferably both a surface-tension reducing agent and a dispersant are utilized.

3,720,530

COMPOSITION FOR PREVENTING RUSSET ON POME FRUIT COMPRISING CASEIN AND HYDRATED SILICONE DIOXIDE

Hisajiro Yukinaga, 1–4–2 Kusatsu, Kusatsu-shi, Japan; Yoshimasa Nan'jo, 3–6 Asahigaoka-cho, Tondabaya-shi, Japan; and Takashi Wada, 2455 Kariya, Ako, Japan

No Drawing. Filed July 30, 1971, Ser. No. 167,816
Claims priority, application Japan, Sept. 7, 1970, 45/78,270
Int. Cl. C08h *17/02*
U.S. Cl. 106—146 6 Claims

An agricultural composition for preventing a russet formation on pome fruit comprising not less than 50% by weight of finely divided, amorphous and hydrated silicon dioxide being substantially $SiO_2 \cdot nH_2O$, not more than 10% by weight of casein, and an agriculturally acceptable carrier.

3,720,531

PROCESS FOR RECOVERING AND MANUFACTURING SILICIC ACID SYSTEM PIGMENT FROM ALKALI PROCESS PULP BLACK LIQUOR CONTAINING SILICATES

Toshiaki Makino, 360 Iwai-machi, Hodogaya-ku, Yokohama-shi, Japan

Filed Mar. 17, 1971, Ser. No. 125,083
Claims priority, application Japan, Oct. 23, 1970, 45/92,748
Int. Cl. C09c *1/30*
U.S. Cl. 106—288 B 5 Claims

A process for recovering and manufacturing silicic acid system pigment from alkali process pulp black liquor containing silicates, in which when said black liquor contains water-soluble silicates, said liquor being added with at least one member selected from the group consisting of substances having stronger acidity than silicic acid, substances having stronger alkalinity than the alkali as used for digestion or their salts, and when said black liquor contains water-insoluble silicates, said liquor being added with acids or ammonium salts which produce water-soluble salts with said water-insoluble silicates or added with carbon dioxide gas, to obtain complex of silicic acid system and organic substance.

3,720,532

HYDROPHOBIC SILICA

Edgar A. Simpson and Carroll F. Doyle, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Apr. 23, 1971, Ser. No. 137,031
Int. Cl. C09c *1/28*
U.S. Cl. 106—308 Q 8 Claims

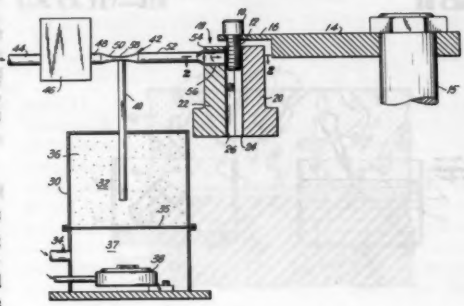
Hydrophobic silica materials are produced by fluid energy milling a silica hydrogel at a temperature of about 100° C. to 215° C. at an essentially atmospheric or superatmospheric pressure to yield a silica hydrogel having an active surface and a substantial silanol group population, and then contacting this milled active silica hydrogel product with a straight chain alcohol of from 4 to 20 carbon atoms at a temperature of about 135 to 220° C.

3,720,533

METHOD FOR APPLYING A THERMOPLASTIC LOCKING PATCH ON A THREADED FASTENER

James J. Gallagher, Chalfont, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Jan. 12, 1971, Ser. No. 105,936
Int. Cl. B44d *1/094*
U.S. Cl. 117—21 5 Claims



A finely powdered thermoplastic material is placed in a fluidizing chamber and is dispensed on a preheated threaded fastener element in controlled amounts by controlled air pulsations which pass through a venturi tube arrangement. The powdered material is deposited on the threaded surface in a predetermined amount and is fused thereto to provide a locking patch of solidified thermoplastic material.

3,720,534

POLYMER GELS AND METHOD OF MAKING SAME

Norman Macaulay, Tonawanda, and Henn Ruus, Niagara Falls, both of N.Y., assignors to Moore Business Forms, Inc., Niagara Falls, N.Y.

Continuation of Ser. No. 798,257, Feb. 3, 1969, abandoned, which is a continuation of Ser. No. 341,055, Jan. 29, 1964, abandoned. This application May 25, 1970, Ser. No. 41,685
Int. Cl. B41c *1/06*
U.S. Cl. 117—36.2 5 Claims

A solid composition exuding oil under pressure and constituted essentially of a solid, generally rigid, lattice of molecules of an acrylate polymer cross-linked with sufficient cross-linking agent up to a minor amount of yield a solid water-insoluble polymer, said lattice having non-volatile, non-drying oil occluded in situ uniformly therethrough, the oil being present in the amount of about 35–80 percent by weight of the solid polymer, the oil being a solvent for the monomer and cross-linking agent and a non-solvent for the solid polymer but exerting at least a partial swelling or plasticizing action on the polymer. The composition may be formed as structures varying from shaped three-dimensional masses to discrete finely-divided particles. The compositions are prepared by vorming an intimate admixture of the monomer and cross-linking agent in the oil and polymerizing the same in situ. Finely-divided particles are obtained by the further steps of dispersing the admixture of monomer oil solution in an aqueous medium and effecting the polymerization while maintaining the dispersion.

3,720,535

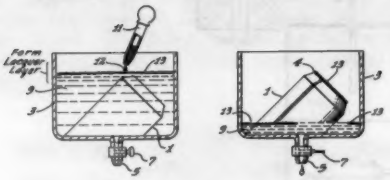
PROCESS FOR APPLYING A NON-SELF-SUPPORTING METAL LAYER ATOP A PLATE SURFACE

Hubert Gene Parish, Belmont, and Bernard Ceasar Einstein, Redwood Estates, both of Calif., assignors to Litton Systems, Inc., San Carlos, Calif.

Filed March 15, 1971, Ser. No. 124,108
Int. Cl. C23c *17/00*
U.S. Cl. 117—46 CA 8 Claims

The process of coating or placing a fragile thin non-self-supporting metal layer upon a surface of a flat platelike body,

such as a microchannel plate as disclosed comprises the steps of placing a thin self-supporting layer of lacquer upon the surface of the platelike body, thereupon depositing over and atop said lacquer layer a sufficient metal to the desired thickness, suitably by vacuum deposition techniques, to form a layer of the metal, and then placing the entire structure in an oven to bake off the lacquer in an air atmosphere and allow the thin



non-self-supporting metal layer to settle against the end surface of the plate. An additional process provides for the formation of the lacquer layer in which the plate remains dry by spreading liquid lacquer over the surface of a fluid in which is submerged a support ring, allowing the lacquer to harden, draining the fluid to permit the lacquer to drape over the support ring, removing the latter assembly and applying the lacquer layer to the platelike body.

3,720,536

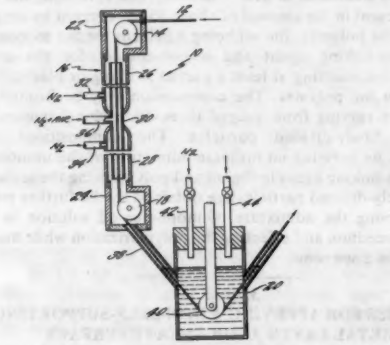
TREATMENT OF CARBON FIBERS

Daniel A. Scola, Glastonbury, and Malcolm Basche, West Hartford, both of Conn., assignors to United Aircraft Corporation, West Hartford, Conn.

Filed June 18, 1970, Ser. No. 47,489

Int. Cl. B44d *1/092, 5/12;* **C01b** *31/07*

U.S. Cl. 117—47 R **3 Claims**



A method of treating carbon fiber to improve its bonding characteristics in a resin matrix comprising heating the fiber to 1,000° –1,500° C and exposing the heated fiber to an atmosphere consisting essentially of nitrogen and 0.1–1.8 percent, by volume, of oxygen for a period of 0.1–60 seconds.

3,720,537

PROCESS OF COATING AN ALLOY SUBSTRATE WITH AN ALLOY

David V. Rigney, Portland, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 25, 1970, Ser. No. 92,932

Int. Cl. C23c *11/00, 17/00*

U.S. Cl. 117—50 **6 Claims**

A process for coating an alloy to render it resistant to oxidation, sulfidation and thermal shock by forming a dispersion of an aluminum alloy and a chromium-aluminum alloy and then bonding the dispersion to the substrate.

3,720,538

METHOD OF PROTECTING MATERIALS AGAINST WATER ABSORPTION

Eduard Bergmeister; Paul-Gerhard Kirst; Siegfried Nitzsche; Ewald Pirson, and Michael Roth, all of Burghausen/Obb., Germany, assignors to Wacker Chemie GmbH, Munich, Germany

Division of Ser. No. 739,662, June 25, 1968, abandoned. This application Dec. 14, 1970, Ser. No. 98,189

Claims priority, application Germany, June 30, 1967, W 44,287

Int. Cl. B32b *13/12;* **B44d** *1/14*

U.S. Cl. 117—72 **9 Claims**

A mixture of 20 to 99% by weight of an organic synthetic resin and 1 to 80% by weight of an organopolysiloxane having the average formula

$$R_xSi(OR')_y(CH)_zO_{4-x-y-z/2} \quad 1$$

wherein R is selected from the group consisting of hydrogen methyl and at least 50 percent of the R's being methyl, R'is alkyl of one to four carbon atoms, x, y and z are O, 1, 2 or 3 with the sum of $x+y+z$ being not greater than 3, the average value of x being 0.9 to 1.7 and the average value of x and y being 0.00 to 0.10 with at least one of the average values for x and y being other than 0.00, said mixture being dissolved in an organic solvent, which is useful for forming a prime coat on construction materials.

3,720,539

PROCESS FOR IMPROVING THE SURFACE ADHESION OF SHAPED ARTICLES MADE FROM POLYESTERS

Markus Seibel, Mainz, and Klaus Thoese, Wiesbaden-Schierstein, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed April 22, 1968, Ser. No. 723,265

Claims priority, application Germany, April 25, 1967, K 62108

Int. Cl. B32b *27/08;* **B44d** *5/04*

U.S. Cl. 117—138.8 F **1 Claim**

This invention relates to a process for modifying the surface of a shaped article made from a polyester which comprises treating the article with an aqueous solution containing a halogenated fatty acid, a wetting agent and a polymer which is compatible with the halogenated fatty acid, and drying the treated article.

3,720,540

PRODUCTION OF GLASS FIBER-REINFORCED PLASTIC ARTICLES

Robert Wimmer, Linzer-Strasse 246, A 4600 Wels, Austria

Filed July 14, 1970, Ser. No. 54,843

Int. Cl. B44d *1/08*

U.S. Cl. 117—139 **10 Claims**

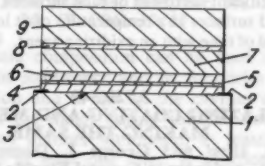
Glass fiber-reinforced plastic articles such as bathtubs are produced by shaping, e.g., vacuum forming, thermoplastic material such as acrylic sheeting into a body and then applying a sprayable mixture of thermosetting unsaturated polyester resin material and a bond-improving additive consisting of a monomeric styrene compound and chalk or talc to the body to

form a coating thereon. Reinforcing glass fibers are embedded in the thermosetting coating which is cured to form the resultant reinforced plastic article. The coating and the reinforcing glass fibers are preferably applied using a "spray-up" system, i.e., coating by means of a spray gun.

3,720,541
TRANSPARENT ARTICLES

Robert David King, Dorridge, England, assignor to Tripley Safety Glass Company Limited, London, England

Filed Nov. 12, 1970, Ser. No. 88,717
Claims priority, application Great Britain, Nov. 20, 1969, 56,906/69
Int. Cl. B44d *1/18*
U.S. Cl. 117—211 20 Claims

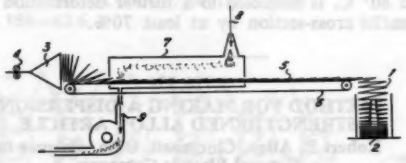


An electrically conductive transparent article comprises a transparent base coated with a first layer of metallic compound, a film of electrically conductive material, a second layer of metallic compound, a third layer of metallic compound, and a final protective layer of a siliceous compound. The third layer comprises a metallic compound which is different from that of the second layer and serves to isolate the first and second layers of metallic compound and the film of electrically conductive material from the surface coating of siliceous compound. Preferably the article has a glass base to which is applied in succession, a layer of bismuth oxide, a film of gold, a layer of bismuth oxide, a layer of copper oxide, and a final surface layer of silica.

3,720,542
PROCESS FOR PRODUCING DENSE METAL OXIDE COATINGS ON SEMICONDUCTOR

Heinrich Sohlbrand, Munich, Germany, assignor to Siemens Aktiengeilschaft, Berlin, Munich and Erlanger, Germany

Filed March 11, 1971, Ser. No. 122,988
Claims priority, application Germany, March 13, 1970, P 20 12 080.3
Int. Cl. H01l *7/00*
U.S. Cl. 117—201 2 Claims



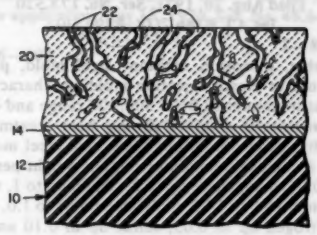
The invention relates to a method of producing dense metal oxide coatings on semiconductors surfaces.

To produce metal oxide coatings which serve as insulation or masking layers on a semiconductor body, an organic compound which contains the metal and oxygen, is dissolved in an organic varnish and applied on the semiconductor surface and transferred into the pure metal oxide layer by thermolysis. The invention is particularly suited for producing Al_2O_3 layers for integrated circuits and transistors.

3,720,543
COATED POROUS CERAMIC ARTICLE AND METHOD OF MAKING

Lawrence G. Beckstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of application Ser. No. 820,054, Apr. 29, 1969. This application Apr. 12, 1971, Ser. No. 133,228
Int. Cl. B44d *1/18*; H01b *3/00*
U.S. Cl. 117—218 18 Claims



A composition for coating a porous inorganic body to promote water repellency while maintaining its flameproof quality consisting essentially of an aromatic or aliphatic hydrogen polysiloxane and combinations thereof, and a volatile solvent. Upon application of the composition to such a body, the solvent rapidly evaporates while the polysiloxane cures leaving a nonablative ceramic-polysiloxane molecular complex on the entire surface of the porous body including the pore defining surfaces or walls without plugging the pores.

3,720,544
HEAT TREATMENT OF HOT ROLLED STEEL WIRE RODS

Michel Entringer, Hayange, France, assignor to Societe Wendel Sidelor S.A., Hayange, France

Filed March 4, 1970, Ser. No. 16,542
Claims priority, application France, March 5, 1969, 6905068; Sept. 3, 1969, 6931036
Int. Cl. C21d *9/64*, *1/00*
U.S. Cl. 148—14 5 Claims

Process for heat treatment in line with a wire rod rolling mill, of a steel wire rod containing less than 0.15 per cent of carbon and which has been previously subjected after leaving a rolling mill to the cooling treatment of a known controlled cooling process and device. The wire rod is subjected to an isothermal holding at a temperature between 200°C and 400°C so that the intersticial atoms place in a supersaturated solution during the known controlled cooling gather together on sites other than dislocations which allows the phenomenon of anchoring of the dislocations to be avoided, this anchoring being partially responsible for the deterioration of the drawability for the fine drawing of such steel wire rods. This thus allows the direct drawing of the wire rod without subsequent heat treatment to a final very small diameter. The process

thereby avoids decomposition of a thin layer of non-adhering wustite formed on the surface of the wire rod during the controlled cooling treatment into an adhering layer of a superior oxide difficult to remove before the drawing off the wire rod.

3,720,545

STEEL MOLD AND METHOD FOR PRODUCING THE SAME

Gary Steven, and Kenneth E. Pinnow, both of Pittsburgh, Pa., assignors to Crucible Inc., Pittsburgh, Pa.

Filed Aug. 20, 1971, Ser. No. 173,520
Int. Cl. B28b 7/34; B29c 1/02
U.S. Cl. 148—2 **9 Claims**

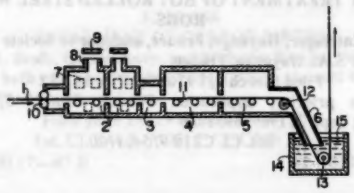
A weldable, corrosion resistant steel mold, particularly suited for use in plastic-injection molding, characterized by ease of heat treatment to BHN 300/400 range and having excellent dimensional stability during heat treatment, deep hardenability, good notch toughness, said steel mold having essentially a composition comprising, in weight percent, carbon up to 0.06, manganese up to 2, silicon up to 1, nickel 2 to 4.0, chromium 10.0 to 14.0, molybdenum up to 1.0, copper up to 1.00, nitrogen up to 0.05, sulfur up to 0.10 and balance iron.

3,720,546

METHOD FOR PREVENTING DESTRUCTION OF STRIP METAL IN ANNEALING FURNACE CONNECTED WITH DIRECT HEATING FURNACE

Saburo Ayusawa, and Kiyotoshi Iwasaki, both of Kisarazu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed April 13, 1970, Ser. No. 27,477
Claims priority, application, Japan, Apr. 21, 1969, 44/31389
Int. Cl. C21d 9/52
U.S. Cl. 148—156 **6 Claims**



Method for preventing destruction of a strip of metal moving in treatment line containing a continuous annealing furnace connected with a direct-heating furnace due to over-oxidation during longer than normal residence in the direct heating furnace, that is, before re-starting from an exigent stoppage of the line, which method is so carried out that at the same time with such stoppage, the opening for air outside of said direct heating furnace is closed, and combustion continues at limited operation rate of the burner, hardly reducing the temperature inside the furnace but maintaining the atmosphere inside the furnace non-oxidant.

3,720,547

PERMANGANATE FINAL RINSE FOR METAL COATINGS

Donald J. Melotik, Dearborn, Mich., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,691
Int. Cl. C23f 7/08
U.S. Cl. 148—6.14 R **9 Claims**

A final rinse for conversion coated metal surfaces comprising an aqueous acidic solution of permanganate ions having a normality in the range from about 0.0001 to about 2.0 N is disclosed. The rinse of the present invention not only yields coatings having superior corrosion resistance but is also easily disposable without harmful effects on the environment.

3,720,548

PROCESS FOR INCREASING THE CORROSION RESISTANCE OF AUSTENITIC STAINLESS STEELS

Franciscus X. C. M. Barake, Sittard; Christiaan G. M. Dijkhuis, and Johan D. Logemann, both of Geleen, all of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed April 1, 1971, Ser. No. 130,483
Claims priority, application Netherlands, April 2, 1970, 7004678
Int. Cl. C23f 9/02, 7/04
U.S. Cl. 148—6.14 R **8 Claims**

A process is described for enhancing the corrosion resistance of austenitic stainless steels which are exposed to solutions containing ammonium carbamate. The process involves exposing the surfaces of such stainless steel equipment, which are exposed to ammonium carbamate solutions during, e.g., the commercial manufacture of urea and melamine, to the corrosive effects of such solutions for a period of time to induce significant corrosion of such surfaces, followed by contacting said surfaces at a temperature of at least about 100° C for a period of time with an oxidizing agent.

3,720,549

INSULATING COATING AND METHOD OF MAKING THE SAME

Robert G. Hirst and George J. Desnoyers, Pittsfield, Mass., assignors to General Electric Company

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,508
Int. Cl. C23f 7/26
U.S. Cl. 142—6.16 **3 Claims**

Electrically insulating coating for strand annealed magnetic silicon steel is composed of an aqueous mixture of (1) the reaction product of chromium trioxide, formic acid and phosphoric acid, (2) phosphoric acid, and (3) colloidal silica.

3,720,550

METHOD OF MAKING MALLEABLE ZINC-ALLOY BODIES

Erich Pelzer, Stolberg, Germany, assignor to Stolberger Zink AG, Aachen, Germany

No Drawing. Filed July 7, 1970, Ser. No. 53,037
Claims priority, application Germany, July 29, 1969, P 19 38 385.8
Int. Cl. C22f 1/16
U.S. Cl. 148—11.5 R **8 Claims**

A method of making malleable zinc-alloy bodies in which a zinc alloy of the following composition: 0.05 to 1.2% by weight aluminum, 0.05 to 0.8% by weight copper, 0.0005 to 0.015% by weight magnesium and 0 to 0.05% nickel, balance high-purity zinc, is maintained at a temperature of 250° to 350° C. to effect homogenization. Thereafter, the zinc-alloy body is subjected at a temperature between 200° and 300° C. to deformation to reduce its cross-section by at least 50% and, at a temperature between about room temperature (ca. 20° C.) and 80° C. is subjected to a further deformation to reduce its cross-section by at least 70%.

3,720,551

METHOD FOR MAKING A DISPERSION STRENGTHENED ALLOY ARTICLE

Robert E. Allen, Cincinnati, Ohio, assignor to General Electric Company

No Drawing. Filed Jan. 29, 1970, Ser. No. 6,931
Int. Cl. B22f 1/00
U.S. Cl. 148—126 **4 Claims**

A superalloy article based on at least one of the elements from the group iron, cobalt and nickel is provided with improved mechanical strength properties, particularly at about 1400° F. or above, through an improved powder metallurgical method. Such a method includes first preparing relatively large particles of the alloy in the size range of about −20 to about −400 mesh. The

particles are then treated in an atmosphere which provides on the particle a film of from a small but effective amount up to about 6 volume percent of the particle of a compound of the alloy selected from the compounds, nitrides, carbides and oxides. The particles so treated are then consolidated into an article, which can be a mill form, during which the film is fragmented and the fragments are dispersed throughout the matrix of the article. Further improved properties are obtained by additional working such as by ordinary means as rolling, forming, swaging, etc. to provide a deformation texture while preferably avoiding recrystallization during working.

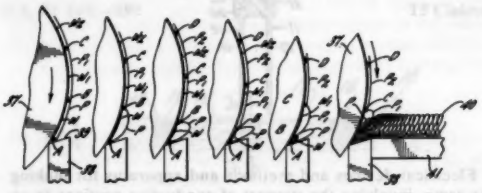
3,720,552
EXOTHERMIC COMPOSITION FOR USE IN STEELWORKS AND IN FOUNDRIES
Simon Lustigue, 28 Avenue Leman, Lausanne, Switzerland
No Drawing. Filed Mar. 15, 1971, Ser. No. 124,508
Int. Cl. C06b *19/02*
U.S. Cl. 149—3 **5 Claims**

This exothermic composition can be used in casting molten metals in steelworks and in foundries so as to delay solidification and to fill up the cavities caused by the shrinkage of the metal during solidification. It contains in a known manner aluminum, at least one oxidising agent and at least one filler. It additionally contains a solid easily combustible carbonaceous material in a finely divided state. This material can be paper or plastic. In case of paper, the proportion as used is at least 5%. This proportion is comprised between 0.2 and 5% in case of plastic. The composition advantageously contains fine particles of a composite consisting of a film of aluminum deposited on a support of a solid easily combustible carbonaceous material such as paper or plastic.

3,720,553
AMMONIUM NITRATE PROPELLANT COMPOSITIONS
Lionel A. Henderson, Columbus, Ohio, assignor to Standard Oil Company, Chicago, Ill.
Filed Feb. 7, 1969, Ser. No. 797,697
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 **5 Claims**

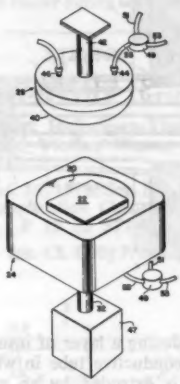
Novel propellant compositions comprising ammonium nitrate as the primary oxidizer and thermoplastic phenoxy resin as the binder.

3,720,554
METHOD OF MANUFACTURING HIGH-LOFT, NONWOVEN FABRIC
Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sept. 10, 1969, Ser. No. 856,793
Int. Cl. B32b *17/04*; D05c *15/00*
U.S. Cl. 156—62.6 **17 Claims**



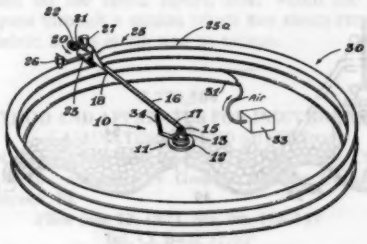
A high-loft, nonwoven fabric with a substantially continuous backing layer of adhesive and multiplicity of fibers looped outwardly from the backing and a method of making the fabric by first embedding a web of fibers in a relatively thick open pattern of adhesive interconnected by relatively thin webs of the same adhesive, and then consolidating the adhesive into a substantially continuous backing layer while looping the fibers outwardly from the backing.

3,720,555
LIGHT POLARIZING DEVICE AND PROCESS FOR MAKING THE SAME
Francis G. Ceppi, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Division of Ser. No. 642,792, June 1, 1967, Pat. No. 3,560,076. This application May 15, 1970, Ser. No. 48,649
Int. Cl. B32b *17/10*
U.S. Cl. 156—102 **6 Claims**



This disclosure involves laminated light polarizing devices concave on one side and convex on the other side and a method for press-forming the same.

3,720,556
METHOD FOR THE PREPARATION OF WALLED STRUCTURES
Donald R. Wright, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 670,055, Sept. 25, 1967, Pat. No. 3,578,537. This application July 13, 1970, Ser. No. 61,030
Int. Cl. B29c *17/00*; B32b *31/12*; B04c *2/30*
U.S. Cl. 156—156 **6 Claims**



A structure is prepared by the spiral generation technique employing a flattened plastic tube which is inflated by means of internal fluid pressure and deposited in a generally helical manner. Adjacent turns of the helix are adhered to each other to provide a walled structure.

3,720,557

PROCESS FOR LINING CONDUCTIVE TUBES WITH INSULATING MATERIAL

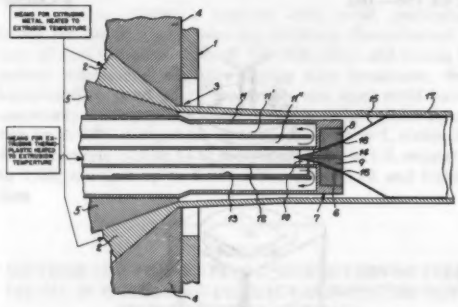
Sergio Longoni, Milan, and Antonio Portinari, Sesto San Giovanni, Italy, assignors to Industrie Pirelli S.p.A.

Filed Oct. 21, 1970, Ser. No. 82,704

Claims priority, application Italy, Mar. 24, 1970, 22,352/70

Int. Cl. B32b *1/08, 15/08, 15/20*

U.S. Cl. 156—156 6 Claims



Process for producing a layer of insulating material on the interior of a conductive tube in which a tube of insulating material is extruded by an extruder head and expanded within the conductive tube as it is extruded by a second extruder head co-axial with the first head as the conductive tube is advanced, the insulating tube engaging the inner wall of the conductive tube at a point where the temperature of the latter is approximately equal to the melting temperature of the insulating material.

3,720,558

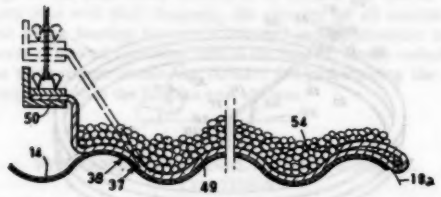
HEAT-INSULATING PANEL OR SHEET AND A METHOD OF AND APPARATUS FOR MAKING THE SAME

John Ian Menzies, and Maureen Menzies, Kenmore, Brisbane, Queensland, Australia, assignors to Heatshield Research and Development Pty. Ltd., Brisbane, Queensland, Australia

Filed June 16, 1969, Ser. No. 834,241

Int. Cl. B31f *1/20, 1/28;* B32b *31/20*

U.S. Cl. 156—199 5 Claims



A panel or sheet is insulated against heat from a heat source by a metal foil lamination bonded to, and separated from direct contact with, the surface of the panel or sheet remote from the heat source by an interposed lamination of transparent thermoplastic material, the bonding being effected by the application of heat and pressure.

3,720,559

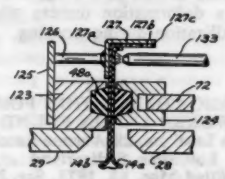
METHOD AND APPARATUS FOR ADHESIVE SEALING OF PLASTIC BAGS

Robert E. Odom, and Richard H. Ayres, both of Minneapolis, Minn., assignors to Bemis Company, Inc., Minneapolis, Minn.

Filed Jan. 20, 1971, Ser. No. 108,004

Int. Cl. B31f *5/04;* B65b *51/02, 7/20*

U.S. Cl. 156—202 20 Claims



A machine for forming a bag closure that includes endless conveyor belts for supportingly conveying at least one bag end portion continuously rearwardly past the member set forth hereinafter, a first trimmer assembly for trimming off part of the one bag end portion that is remote from the belts, a slitter assembly for slitting part of the leading and trailing edges of the non-trimmed off one end portion to provide first and second side wall flaps and first and second side wall portions joined to the respective flap, and spreading the side wall flaps, a side flap trimmer assembly to trim off a part of the first side flap, a guide and ramp rearwardly of the first trimmer assembly to retain the second flap spaced from the side flap trimmer assembly and move the first flap to a condition to be trimmed, a second ramp and a folder assembly for relatively folding a trimmed first flap terminal part and the second flap to have the first flap underlapping part of the second flap, an applicator for applying adhesive to the folded flaps, a folder blade for folding the first flap terminal part and second flap with adhesive thereon against the first side wall portion to form a sealed closure and compression rollers for compressing the sealed closure.

3,720,560

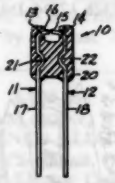
SPARK GAP DEVICES AND METHODS AND APPARATUS FOR MAKING SAME

Sylvester R. Taterzynski, and George Dand Raeburn, both of Milwaukee, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Division of Ser. No. 728,497, May 13, 1968, Pat No. 3,586,903. This application Aug. 18, 1970, Ser. No. 64,800

Int. Cl. B32h *31/10;* H01j *9/2*

U.S. Cl. 156—268 8 Claims



Electrical devices and methods and apparatus for making the same, involving the support of conductive portions in an insulating member. Spark gap devices are constructed by moving heated rigid pressure members together to press kinked U-shaped wires into a strip of insulating material which is preferably a glass fiber mat pre-impregnated with a semi-cured polyester. A second strip may be used with the wires being sandwiched between the strips which are pressed

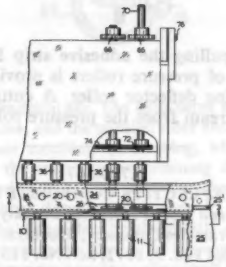
together by the pressure members to fuse them. The bight portions of the U-shaped wires are severed to provide spark gaps, preferably by use of severing means associated with the pressure members. By making a plurality of spark gap devices in strip form grooves for automatic separation may be formed by providing projections on at least one of the pressure members.

3,720,561

PROCESS FOR PRODUCING MANIFOLDED FORMS

Henry E. Dorrow, Ottawa, Ontario, Canada, assignor to R. L. Crain Limited, Ottawa, Ontario, Canada

Filed Jan. 20, 1970, Ser. No. 4,269
Int. Cl. B32b 31/20
U.S. Cl. 156—272 6 Claims



A process is described for producing a manifolded business form from a plurality of superimposed plies of printable material. Each of the plies has at least one adhesive covered portion thereto for joining the plies together. In the process, the plies are fed along a path so as to expose the adhesive covered portion to microwave energy which effects setting of the adhesive. While the adhesive is setting, squeezing pressure is applied periodically to a number of spots in each adhesive covered portion to disable any tendency of the plies to separate.

3,720,562

A METHOD OF BONDING NON WOVEN FABRICS

Arthur H. Drelich, Plainfield, N.J., assignor to Johnson & Johnson

Continuation-in-part of Ser. No. 800,265, Feb. 18, 1969, Pat. No. 3,649,330, which is a continuation-in-part of Ser. No. 618,317, Feb. 24, 1967, abandoned, and a continuation-in-part of Ser. Nos. 623,797, March 10, 1967, Pat. No. 3,536,518, and Ser. No. 2,955, Jan. 14, 1970, abandoned, and Ser. No. 817,177, April 17, 1969, which is a continuation-in-part of Ser. No. 639,011, May 17, 1967, abandoned. This application Aug. 21, 1970, Ser. No. 65,880
Int. Cl. B32b 7/14
U.S. Cl. 156—291 15 Claims

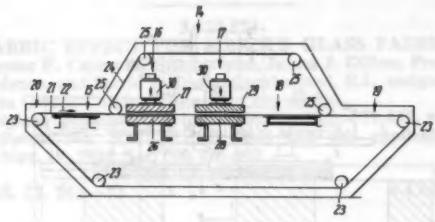
Bonded fibrous nonwoven textile fabrics having excellent strength and textile-like softness, drape and hand which are intermittently bonded with synthetic resins in predetermined print patterns of binder areas having a relatively high, uniform concentration of from about 50 percent to about 120 percent by weight of resin binder in the binder areas, based on the weight of the fibers therein, said binder areas having very sharply defined borders or edges with a minimum of binder feathering thereat whereby the optical density of the bonded fibrous nonwoven textile fabric very sharply increases from substantially zero to a maximum of at least from about 0.6 to about 1.0 or greater in a distance of less than about 1 mm. (0.04 inch), and methods of depositing such synthetic resins from colloidal aqueous dispersions thereof into wet fibrous webs to form the bonded fibrous nonwoven textile fabrics, comprising the use of (1) metal complex coordination compounds and (2) synthetic resins and/or surfactants, at least one of which contains a specific coordinating ligand capable of being affected by ions or said metals to control the total migration of the resin binder during such deposition.

3,720,563

METHOD AND APPARATUS FOR GLUING FLAT SHAPED TEXTILE ARTICLES

Herbert Kannegiesser, Hollwiesen-Vlotho, Weser, and Richard Juraschek, Vlotho, Wesser am Kinderheim, Germany

Filed Oct. 26, 1970, Ser. No. 83,919
Claims priority, application Germany, Oct. 24, 1969, P 19 53 577.4
Int. Cl. C09j 7/04
U.S. Cl. 156—306 6 Claims



A method and apparatus for gluing multilayer textile fabrics together which comprises a means for automatically conveying the fabric pieces to a first heating and pressing station, where a heated press is used to melt the glue which has been previously applied to one of the fabric layers and simultaneously convert any moisture contained in the fabric layers to steam, which then escapes from the fabric layers. A second heating and pressing operation is performed on the fabric layers, after which the textile fabrics pass through a station where any steam remaining in the fabric layers is allowed to escape.

3,720,564

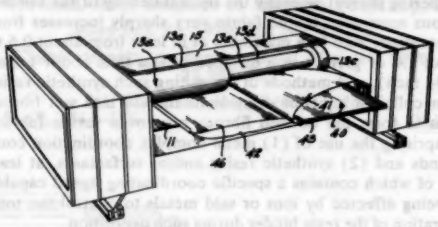
METHOD AND APPARATUS FOR INDIVIDUALLY LAMINATING BOUND SHEETS

Henry N. Staats, Deerfield, and Neal J. Morrissey, Chicago, both of Ill., assignors to General Binding Corporation, Northbrook, Ill.

Filed Jan. 13, 1971, Ser. No. 106,157
Int. Cl. B42c 11/02
U.S. Cl. 156—477 B 4 Claims

A compact, inexpensive laminating device for applying heat and pressure to a sandwich of sheet materials desired to be laminated, at least one of which has previously been bound to other materials. A highly efficient material transfer and heat application system is constructed of a minimum of moving parts and simple provision is made for permitting the passthrough of the previously bound materials without being affected by the laminating device. Novel laminating roll configu-

ration and mounting combine to permit lamination of photographs and other similar identification data in previously assembled books such as, for example, passports, bank deposit books, and the like, in a tamper-proof manner.

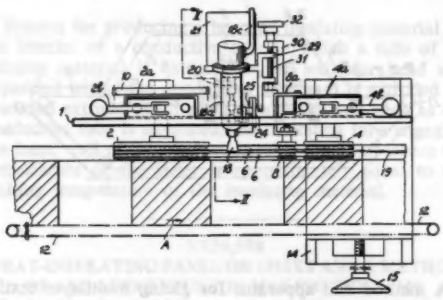


3,720,565

DEVICE FOR LONGITUDINALLY WELDING TAPES OF PLASTICS MATERIAL - IN PACKAGING MACHINES

Mario Cavanna, Via Antonelli, 24, Romagnano Sesia (Novara), Italy

Filed June 29, 1970, Ser. No. 50,727
Int. Cl. B65b *51/20*
U.S. Cl. 156—497 **3 Claims**



A device for longitudinally welding tapes of plastics material in packaging machines, which comprises, pulleys on a plate-like element which may be adjusted in level, at least some of said pulleys being driving pulleys and rotatably mounted with preferably vertical axis, on the said pulleys two pairs of endless belts being taken up, which have straight sections tangent between the said pulleys at the welding zone in order to clamp therebetween the edges of the tape of plastics material to be welded, the said belts being overlapped at a short distance from one another in number of two at each side with respect to the said welding zone, in such a manner as to define a narrow strip at which at least one nozzle is mounted to blow hot air.

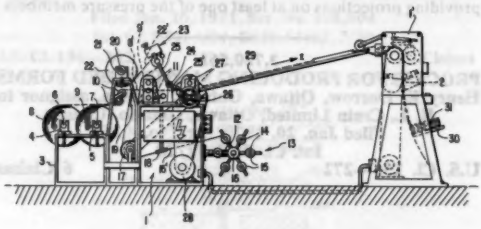
3,720,566

MACHINE FOR MANUFACTURING ADHESIVE BINDER COVERS

Egon Helmann, Falkenberg 61, Wuppertal-Elberfeld, Germany

Filed June 8, 1970, Ser. No. 48,608
Claims priority, application Germany, June 28, 1969, P 19 32 967.0
Int. Cl. B32b *31/08, 31/20*
U.S. Cl. 156—544 **16 Claims**

A machine for manufacturing adhesive binder covers is provided with a pair of off-set magazine rolls of two strips of non-adhesive material. The rolls are separated so the strips are supplied with a gap between them. A roll of adhesive strip is positioned in alignment with the gap. A pulling deflector roller having a plurality of separate contact members, preferably point contact members, is provided for pulling the adhesive strip from its roll. At least one pair of pressure rollers is provided downstream from the pulling deflector roller. A cutting device is arranged downstream from the pressure rollers.

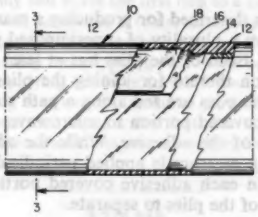


3,720,567

LIGHT REFLECTIVE COMPOSITE MOLDING

Victor Shanok, and Jesse P. Shanok, Brooklyn, N.Y., assignors to Glass Laboratories Company, Brooklyn, N.Y.

Filed Feb. 9, 1971, Ser. No. 113,858
Int. Cl. B32b *15/08*; E04f *19/02*; B44f *1/02*
U.S. Cl. 161—5 **11 Claims**



A composite molding comprising an elongate transparent casing adapted for operative association with an external source. The casing includes a pair of opposing faces one of which is adapted to contact and be concealed by the external source and the other of which is adapted to be exposed relative to the external source. A metallic strip extends in the casing proximate and generally parallel to the one of the faces which is adapted to contact the external source. A light-reflective strip extends in the casing generally parallel to the metallic strip and is separated from the latter of said faces by the metallic strip. A transparent self-hardening coating such as lacquer, varnish or the like extends on the light-reflective strip proximate the face which is adapted to be exposed relative to the external source. The coating is adapted to seal and eliminate air-cavities existing between the light-reflective strip and the exposed surface of said faces to obviate interference of light-rays to be reflected by the molding.

3,720,568

SEATING AND SUB-ASSEMBLY FOR SEATS AND BACKS

David L. Rowland, 49 West 55th Street, New York, N.Y.

Filed March 22, 1971, Ser. No. 126,808
Int. Cl. A47c *7/02*; F16f *3/02*
U.S. Cl. 161—48 **47 Claims**

Seats and backs for chairs and other seating units are made as a sub-assembly of sinuous spring wires. For example, a rim, typically having straight ends joined by usually parallel sides shaped as circular arcs, encloses, and its straight ends are attached to, the opposite ends of each of a series of the sinuous

spring wires, which extend between them in a circular arc paralleling those of the rim sides. Each of the two extreme spring wires is preferably tangent at each cycle to one of those sides, and each wire touches its adjacent wire at least once per cycle. A thin sleevelike plastic coating surrounds the wires and follows their sinuous shape. It also surrounds the rim and links the wires and the rim together and links the wires themselves together wherever they touch, into a unitary assembly shaped as a cylindrical arc and intended to be flattened somewhat when installed on a chair frame, to place the springs in tension

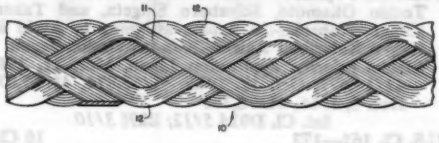
along a flatter cylindrical arc. The ends serve to mount the assembly on the frame, and the parallel sides enclose the springs and minimize their catching on clothing, while the tension provides one of the main forces retaining the assembly in place. In preferred forms of the invention the plastic coating has an A-scale Shore durometer between 45 and 90, so that the assembly is held together by the plastic coating without substantially restraining the flexing of the spring wires, while the coating also provides a spring action itself between the adjacent wires, by stretching and contracting, giving a two-way stretch.

3,720,569

ENDLESS REINFORCEMENT AND METHOD FOR PRODUCING SAME

Victor W. Kimble, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 14, 1970, Ser. No. 97,715
Int. Cl. B32b *5/12*
U.S. Cl. 161—57 **19 Claims**



An endless reinforcement which comprises a unitary strip including a multiplicity of continuous cords, the strip forming a generally zigzag pattern and being positioned across the width of the reinforcement from one side to the other at an angle to the edges of the reinforcement with a turn at each edge about an axis substantially perpendicular to the major plane of the strip. Also, a method for producing such a reinforcement and a tire therewith as well as the resulting tire.

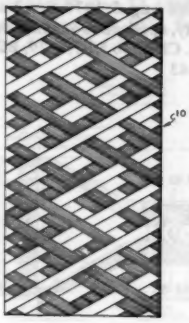
3,720,570

ENDLESS REINFORCEMENT AND METHOD FOR PRODUCING SAME

Charles W. Greene and George C. Varner, Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 18, 1970, Ser. No. 90,560
Int. Cl. B32b *5/12*
U.S. Cl. 161—58 **17 Claims**

An endless reinforcement which comprises a plurality of unitary strips including a multiplicity of continuous cords with the strips being positioned across the width of the reinforcement from one side to the other at opposing angles to the edges of the reinforcement with successive lengths of the strips being folded with respect to each other at the edges to form a generally zigzag pattern. Also, a method for producing such a reinforcement and a tire therewith as well as the resulting tire.



3,720,571

FABRIC EFFECT FOR FIBROUS GLASS FABRICS

Remus F. Caroselli, Cumberland, James J. Dillon, Providence, and David E. Leary, Cumberland, R.I., assignors to Owens-Corning Fiberglas Corporation

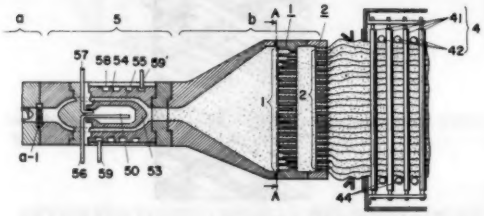
Original application Sept. 8, 1966, Ser. No. 578,430, now Patent No. 3,571,871. Divided and this application Mar. 19, 1971, Ser. No. 126,093
Int. Cl. D03d *3/00*
U.S. Cl. 161—73 **4 Claims**

Fibrous glass fabric having pseudo-embossed effects, comprising warp and weft yarns lying in laterally and vertically randomly shifted, stress-relieved and compacted equilibrium configurations of the original weave pattern wherein the yarns were originally in a stressed condition due to their displacement from an essentially straight configuration into sinusoidal paths in the original weave pattern.

3,720,572
SYNTHETIC WOOD AND A METHOD FOR PREPARATION THEREOF

Shigenari Soda, Kyoto; Tatsujiro Seki; Shigeru Daiguji, both of Nara, and Motoshige Hayashi, Ikoma-gun, all of Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Minamikyobate-cho, Nara-shi, Japan

Filed Aug. 5, 1970, Ser. No. 61,247
Claims priority, application Japan, Aug. 7, 1969, 44/62749
Int. Cl. B32b *5/02, 5/20;* B29d *27/00*
U.S. Cl. 161—143 12 Claims

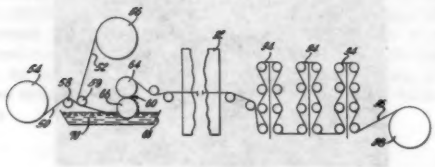


A synthetic wood is provided which is an elongated microporous article formed of a plurality of coalesced, foamed resin strands. The strands are in intimate contact with each other, and each has a higher density in its outer surface and lower density in its inner portion. Thus, the cross section of the synthetic wood comprises a frame distributed in a reticulate form. The synthetic wood of the invention is produced by extruding softened thermoplastic resin containing expanding agents into a plurality of expandable strands by passing it through a die at the discharge end of an extruder, said die having a number of apertures and coalescing the strands into a microporous article having a desired cross-sectional area while the strands are still in a softened state, wherein the space in which each individual strand is allowed to expand is restricted to provide each of the strands with a higher density outer surface.

3,720,573
RESIN BONDED DRY CREPED TISSUE LAMINATE HAVING THE CREPE REMOVED THEREFROM AND METHOD OF MAKING SAME

Warren C. Mayer, Somerville, N.J., assignor to Johnson & Johnson

Continuation-in-part of Ser. No. 671,963, Oct. 2, 1967, abandoned. This application March 26, 1970, Ser. No. 22,942
Int. Cl. B32b *7/04, 29/00*
U.S. Cl. 161—156 5 Claims



An impregnated paper product having strength, toughness, tear resistance, softness, hand and breathability sufficient to permit such papers to be used as substitutes for woven or non-woven fabrics in making disposable fabric products. By applying conventionally known strength imparting resins, polymers, and copolymers to multi-ply, dry creped tissue papers of low basis weight, which multi-ply laminate has the crepe removed therefrom as a result of passing through an aqueous suspension or emulsion of such resins, polymers or copolymers, the stiffness, noisiness and loss of breathability that result from such impregnation of single ply creped or uncreped papers does not occur.

3,720,574
FILTER ELEMENT

Frank C. Kunc, East Brunswick, N.J., assignor to Scott Paper Company, Delaware County, Pa.

Filed July 28, 1971, Ser. No. 166,990
Int. Cl. B32b *5/18*
U.S. Cl. 161—156 4 Claims

A flexible, reticulated, polyurethane foam which has been rigidified by coating the strands with an epoxy resin is especially useful as a filter element due to the unexpected increase in dirt holding capacity of the rigidified foam as compared to the flexible, untreated foam.

3,720,575
MANUFACTURE OF FIBRE-REINFORCED CARBON BODIES

Frederick Claud Cowlard, Towcester, England, assignor to Beckwith Carbon Corporation, Van Nuys, Calif.

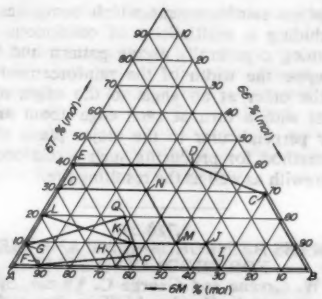
No Drawing. Filed Feb. 3, 1971, Ser. No. 112,479
Claims priority, application Great Britain, Feb. 6, 1970, 5,863/70
Int. Cl. B32b *5/16*
U.S. Cl. 161—170 7 Claims

A mechanical strength of a carbon body made by carbonization of a phenolic resin body, which may be so-called vitreous carbon, is greatly increased by embodying therein pre-stressed carbon fibres. Pre-stressing of these fibres is preferably effected by embodying in the phenolic body, prior to its carbonization, fibres made from acrylonitrile whose normal carbonization process has been conducted only to the stage of oxidising the fibres while they are under tension. During the subsequent carbonization of the resin the fibres will shrink more than the resin, thereby producing pre-stressing, or assisting previously mechanically applied pre-stressing, of the fibres in the resulting carbon body.

3,720,576
CRIMPED COMPOSITE FIBERS AND PROCESS FOR PREPARATION THEREOF

Yoshisato Fujisaki, Noboru Fukuma, Hiroshi Chayamiti, Toshio Okamoto, Seizaburo Shigeta, and Takanobu Kitago, Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Claims priority, application Japan, Mar. 11, 1966, 41/14,671; Oct. 17, 1966, 41/67,874, 41/67,873; Dec. 1, 1966, 41/78,365
Int. Cl. D01d *5/12;* B29f *3/10*
U.S. Cl. 161—173 10 Claims



Crimped composite fibers having a large number of crimps, high crimp elongation, high crimp strength, high crimp developing capability and high bulkiness can be obtained by spinning a homopolyamide component and a terpolyamide component produced by polymerizing

ε-caprolactam, hexamethylenediammonium adipate (66 salt) and hexamethylenediammonium terephthalate (6 T salt), the composition of said copolymer falling within a specified area in a triangular coordinate, into fibers through a common spinneret, stretching the resultant fibers and subjecting the drawn fibers to heat treatment.

3,720,577

CHLORINE DIOXIDE-PERACETIC ACID-CHLORINE DIOXIDE PULP BLEACHING SEQUENCE

Sunanda K. Roymoulik, Suffern, N.Y., assignor to International Paper Company, New York, N.Y.

No Drawing. Filed May 25, 1970, Ser. No. 40,403
Int. Cl. D21c *9/14, 9/16*
U.S. Cl. 162—67 11 Claims

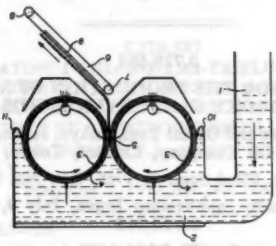
A chemical pulp can be bleached with chlorine dioxide in the first stage and peracetic acid in the second stage to a brightness of 60% or above. The addition of a chlorine dioxide third stage results in a fully bleached pulp having a brightness of 80% or above in just 3 stages, compared to the usual 5 or 6 stage sequences.

3,720,578

NON-WOVEN TEXTILE FLEECE CONTAINING PERFORATED AREAS

Wilhelm Heling, Bensheim-Auerbach, and Hans Brehm, Furth/Odenwald, both of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Aug. 24, 1970, Ser. No. 66,519
Claims priority, application Switzerland, Aug. 29, 1969, 13136/69; Germany, Sept. 18, 1969, P 19 47 176.2
Int. Cl. D04h *1/44;* D21h *5/02*
U.S. Cl. 162—116 4 Claims



A perforated non-woven fleece is formed by filtering through a screen having a pattern of impermeable areas an aqueous slurry containing textile fibers to the extent of less than about 0.5 percent by weight. Preferably two such screens are provided in the form of a covering on a pair of oppositely rotating drums forming a nip therebetween to which the slurry is continuously supplied, the water is sucked into the drums and the fleece issues from between the nip. The impermeable areas are preferably dots of resilient plastic material such as polyvinyl chloride which project in the direction of the nip to a height of at least 0.5 mm so that no fiber is laid down where such projecting dots are located, the resulting fleece thereby having perforations in the corresponding areas.

The slurry may contain a binder which is laid down together with the fibers so as to be uniformly distributed throughout the resulting fleece which can then be converted into fabric form by activating the binder.

The resulting fleece is characterized by a substantially uniform fiber density around the perforations as well as elsewhere throughout the fleece.

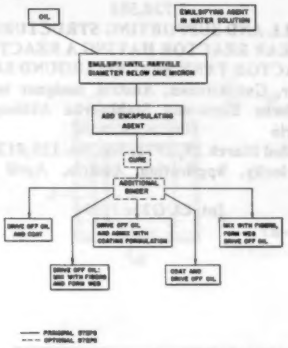
The method of producing the screen comprises printing onto a permeable base a thixotropic combustion and allowing the printed portions to set into impermeable deposits.

3,720,579

FIBROUS SUBSTRATES WITH MICROCAPSULAR OPACIFIERS

Anthony Vassiliades, Deerfield; Edward F. Nauman, Lake Forest, and Shrenik Shroff, Chicago, all of Ill., assignors to Champion International Corporation, New York, N.Y.

Division of Ser. No. 786,337, Dec. 23, 1968, Pat. No. 3,585,149. This application March 16, 1971, Ser. No. 124,986
Int. Cl. D21h *3/80*
U.S. Cl. 162—162 6 Claims


OIL
EMULSIFYING AGENT IN WATER SOLUTION
EMULSIFY UNTIL PARTICLE DIAMETER BELOW ONE MICRON
ADD ENCAPSULATING AGENT
CURE
ADDITIONAL BINDER
DRIVE OFF OIL AND COAT
DRIVE OFF OIL AND ADMIX WITH COATING FORMULATION
MIX WITH FIBERS, FORM WEB DRIVE OFF OIL
DRIVE OFF OIL; MIX WITH FIBERS AND FORM WEB
COAT AND DRIVE OFF OIL
REQUIRED STEPS
OPTIONAL STEPS

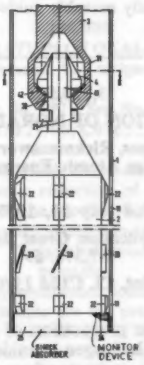
Opacifiers comprising air-containing microcapsules having an average particle diameter of below about 1 micron provide highly opaque surfaces when coated onto and/or incorporated into fibrous and non-fibrous substrates. The opacifiers are produced by heating liquid-containing precursor microcapsules at temperatures sufficient to expel the liquid and provide air in the microcapsule.

3,720,580

DEVICE FOR COUPLING NUCLEAR REACTOR CONTROL RODS TO DRIVE LINKAGE THEREFOR AND FOR MAINTAINING CONTROL RODS IN REACTOR CORE

Hans-Peter Schabert, and Rainer Pawlitzki, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 5, 1969, Ser. No. 882,670
Claims priority, application Germany, Dec. 7, 1968, P 18 13 293.9
Int. Cl. G21c *7/08*
U.S. Cl. 176—36 R 6 Claims



Method of coupling nuclear reactor control rods, displaceable in guide tubes and around which coolant flows in a nuclear

reactor, to a drive linkage therefor, and uncoupling the control rods from the drive linkage includes turning a one-piece drive linkage with respect to a control rod located in reactor shut-off location, and turning the control rod proper with the aid of the drive linkage with respect to a guide tube in which the control rod is received, for the purpose of locking and unlocking the same.

3,720,581

INNER SHELL AND SUPPORTING STRUCTURE FOR USE IN A NUCLEAR REACTOR HAVING A REACTOR CORE AND A REACTOR TANK SPACED AROUND SAID CORE

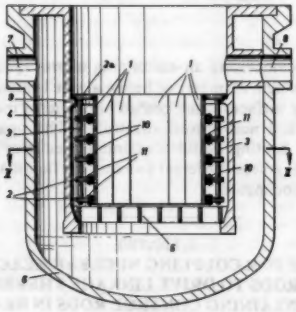
Arthur Kaser, Gunskirchen, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed March 29, 1971, Ser. No. 129,012

Claims priority, application Austria, April 30, 1970, 3948/70

Int. Cl. G21c *13/04*

U.S. Cl. 176—87 16 Claims



A plurality of vertical inner shell plates form an inner shell and are free of direct interconnections. A plurality of vertically spaced, horizontal section ribs are provided, each of which surrounds said shell. A plurality of vertical posts are connected to said ribs to form therewith a cage adapted to be inserted as a whole into said tank around said core. Each of said inner shell plates is firmly secured to only one of said section ribs and vertically movably guided on all other section ribs.

3,720,582

PREPARATION OF NORADRENALINE

Michael Harry Barnes, Rickmansworth, England, assignor to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed July 20, 1970, Ser. No. 56,754

Claims priority, application Great Britain, July 24, 1969, 37,376/69

Int. Cl. C12d *13/02*

U.S. Cl. 195—30 5 Claims

A process for the preparation of noradrenaline which comprises reacting hydrogen cyanide with 3,4-diacetoxybenzaldehyde in the presence of an enzyme to produce a cyanohydrine which is then reduced and deacetylated to give *dl*-noradrenaline.

3,720,583

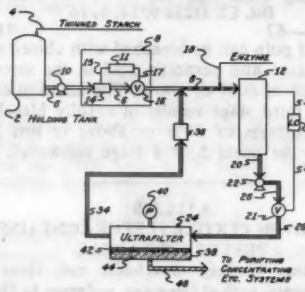
ENZYME HYDROLYSIS

Earl Eugene Fisher, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Dec. 20, 1968, Ser. No. 785,607

Int. Cl. C13k *1/06*

U.S. Cl. 195—31 R 21 Claims



Process for continuously producing hydrolytic products whereby carbohydrates are hydrolyzed with enzymes under conditions which minimize enzyme inactivation and thereafter isolated and recovered by means of ultrafiltration.

3,720,584

PROCESS FOR THE PRODUCTION OF MONOHYDROXY CARBOXYLIC ACIDS

Kouichi Yamada and Osami Yagi, Tokyo, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,179

Claims priority, application Japan, July 9, 1969, 44/53,968

Int. Cl. C12d *1/00*

U.S. Cl. 195—49 2 Claims

Process for the production of monohydroxy carboxylic acids such as lactic acid wherein Arthrobacter, Alcaligenes or Fusarium microorganisms are aerobically incubated in a culture medium including glycols as a source of assimilable carbon.

3,720,585

PROCESS OF REDUCING THE NUCLEIC ACID CONTENT IN YEAST

Steven R. Tannenbaum, Framingham; Anthony J. Sinskey, Southbridge, and Stephen B. Maul, Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed July 8, 1970, Ser. No. 53,263

Int. Cl. C12c *11/00*

U.S. Cl. 195—98 9 Claims

A process performed upon yeast cells to produce inexpensive, palatable protein by first heat shocking at preselected temperatures, then incubating at other preselected temperatures, under controlled pH and for prescribed intervals of time.

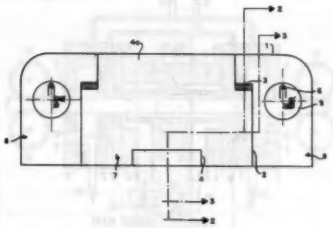
3,720,586

MULTIPLE EXPANSION FLASH EVAPORATOR COMPRISING A CONTINUOUS CASING WITH A CENTRAL EVAPORATION CHAMBER

Diego Barba, Candido D'Agostino, and Giuseppe Liuzzo, Rome, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

Filed Apr. 15, 1970, Ser. No. 28,827
Int. Cl. B01d 3/02, 3/06
U.S. Cl. 202—173 2 Claims

A multiple expansion flash evaporator comprising a continuous casing, with vertical longitudinal baffles dividing the casing into a central evaporation zone and two side condensation zones in communication with the central zone, a number of vertical transverse baffles dividing



the evaporator into a succession of expansion chambers with flow openings between them, and a multi-tube heat exchanger running the length of each condensation zone.

3,720,587

SEPARATING 1-CHLORO-2,2-TRIFLUORO-ETHYL DIFLUOROMETHYL ETHER FROM 1-CHLORO-2,2,2-TRIFLUOROETHYL DIFLUOROCHLORO-METHYL ETHER BY AZEOTROPIC DISTILLATION

Louise S. Croix, Summit, N.J., assignor to Airco, Inc., New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,399
Int. Cl. B01d 3/36
U.S. Cl. 203—58 8 Claims

Azeotropes of 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether and acetone, methyl ethyl ketone or tetrahydrofuroan are formed and used to separate this ether from 1-chloro-2,2,2-trifluoroethyl difluorochloromethyl ether.

3,720,588

BLACK CHROMIUM PLATING PROCESS

George E. Oleson, 3502 Burrows Avenue, Fairfax City, Va., and Roger M. Woods, 2301 S.E.th Thomas Road, Charlotte, N.C.

Continuation-in-part of Ser. No. 422,503, Dec. 31, 1964, abandoned. This application Nov. 30, 1970, Ser. No. 93,871
Int. Cl. C23b 5/06
U.S. Cl. 204—51 4 Claims

A process for producing a lustrous, deep black, corrosion resistant, adherent film upon a conductive base which comprises electrodepositing such film upon such base acting as a cathode, employing an electrolyte comprising:

A. 20 – 35 percent by weight water; and

B. 65 – 80 percent by weight of a mixture of:

1. 30 – 75 percent by weight chromic anhydride; and

2. 25 – 70 percent by weight acetic acid,

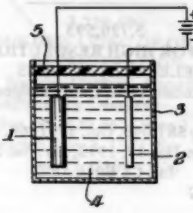
while maintaining the electrolyte at a temperature of 60° to 80° F. while passing a current therethrough at a current density of 125 to 1,000 amperes per square foot.

3,720,589

METHOD OF FORMING A HEAT RESISTANT FILM

Kunihiko Masunaga; Hiroshi Shinohara, and Toshihito Kondo, all of Toyota-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-Shi, Japan

Filed Aug. 6, 1971, Ser. No. 169,721
Claims priority, application Japan, Aug. 17, 1970, 45/71602
Int. Cl. C23b 5/00, 9/00; B01k 5/00
U.S. Cl. 204—14 N 8 Claims



A method of forming a highly heat-resistant polymer film on an object surface by electrolyzing a vinyl monomer and a α,α'-derivative salt of p-xylylene without use of any supporting electrolyte and with the object taken as one of the electrodes.

3,720,590

METHOD OF COATING AN ELECTRODE

Bernard J. DeWitt, Akron, and Aleksandrs Martinsons, Wadsworth, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 850,258, Aug. 14, 1969, abandoned. This application June 22, 1971, Ser. No. 155,647
Int. Cl. C23b 5/52
U.S. Cl. 204—37 R 18 Claims

A novel method of producing an anode for use in the electrolysis of an aqueous solution such as of an alkali metal chloride. The method includes electrodeposition of a layer of a platinum group metal from a solution containing an organic material onto an electroconductive substrate, typically of titanium. After the electrodeposition, the coated substrate is heat treated to decompose the organic material and form a coating comprising a platinum group metal and carbon.

3,720,591

PREPARATION OF OXALIC ACID

Leonidas Skarlos, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

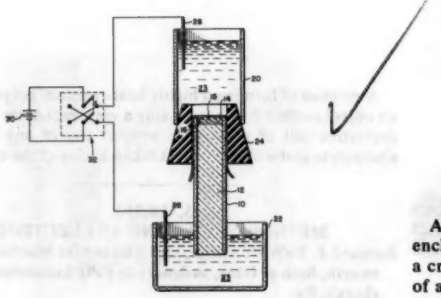
Filed Dec. 28, 1971, Ser. No. 213,206
Int. Cl. C07b 29/06; C07c 51/40, 55/06
U.S. Cl. 204—59 R 10 Claims

An oxalate salt from which oxalic acid may be produced is prepared by the cationic reduction of carbon dioxide in an electrolytic cell wherein the anode and cathode compartments are separated by a porous membrane and the catholyte is an organic solvent. Tetraethylammonium perchlorate, tetraethylammonium bromide, tetrabutylammonium perchlorate, tetrabutylammonium iodide and tetraethylammonium p-toluenesulfonate are the preferred solutes for the catholyte. Coulombic yields as high as 75 percent are obtained where the anolyte is the same electrolyte and solvent as the catholyte while yields as high as 97 percent of sodium oxalate are obtained when aqueous solutions of sodium salts are used as the anolyte.

3,720,592
VINYL ESTER RESINS CURED BY IONIZING RADIATION IN THE PRESENCE OF CBr_4
Inder Mani, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Mar. 12, 1971, Ser. No. 123,913
Int. Cl. C08g 45/04
U.S. Cl. 204—159.15 18 Claims

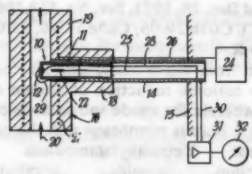
The addition of at least about 0.1 weight percent of carbon tetrabromide to a thermosettable mixture of certain vinyl monomers and polymerizable vinyl ester resins reduces the dosage level of ionizing radiation required to cure the mixture.

3,720,593
METHOD FOR HIGH RESOLUTION ZONE ELECTROPHORESIS
Eva Th. Juhos, Mountain View, Calif., assignor to Beckman Instruments, Inc.
Division of Ser. No. 587,013, Oct. 17, 1966, abandoned. This application Jan. 17, 1972, Ser. No. 218,613
Int. Cl. B01k 5/00
U.S. Cl. 204—180 G 2 Claims



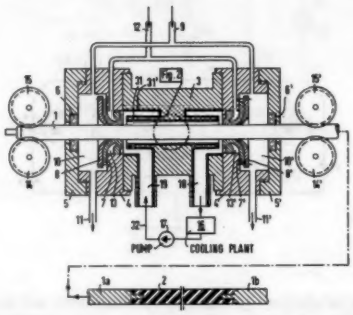
A method of separating particles by zone electrophoresis by applying a potential gradient in one direction, allowing particles to migrate and build-up against a barrier, then reversing the current to allow the particles to migrate away from the barrier.

3,720,594
APPARATUS FOR MEASUREMENT OF GAS MIXTURE PROPERTIES
Haydn Wilson, Luton, England, assignor to Kent Instruments Limited, Luton, Bedfordshire, England
Filed May 4, 1970, Ser. No. 34,356
Claims priority, application Great Britain, May 9, 1969, 23,767/69
Int. Cl. G01n 27/46
U.S. Cl. 204—195 S 12 Claims



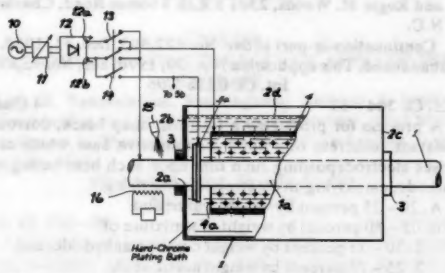
In a method of apparatus for measuring the percentage content or partial pressure of one component of a gas mixture, or for measuring the chemical potential of one component of a gas mixture, a sample flows through a sample tube incorporating the cell and located in the mixture, the sample being heated in the tube to the temperature needed for operation of the cell. The sample is caused to flow through the tube by the flow of the mixture, by convection due to the heating or by the suction of a pump.

3,720,595
APPARATUS FOR ELECTROLYTIC POLISHING OF ROD-SHAPED WORKPIECES
Ludwig Kohler, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 9, 1970, Ser. No. 44,720
Claims priority, application Germany, June 19, 1969, P 19 31 174.1
Int. Cl. C23b 5/68; B23p 1/12; B01k 3/00
U.S. Cl. 204—206 8 Claims



A tubular electrolyte container functions as a cathode and encloses a workpiece moving therethrough. The container has a cross-section corresponding to that of the workpiece. Each of a pair of seals is provided at a corresponding axial end of the container to seal the container from the workpiece and the outside. Electrolyte is continuously circulated in the container. Rollers outside the container move the workpiece through the container and supply electric current to the workpiece.

3,720,596
APPARATUS FOR THE HARD-CHROME PLATING OF LARGE METALLIC SURFACES
Antoaneta M. Draghicescu, and Aurel C. Radoi, both of Bucharest, Romania, assignors to Institutul De Cercetari Technologice Pentru Constructii De Masini
Division of Ser. No. 813,828, April 7, 1968, Pat. No. 3,616,287. This application June 15, 1970, Ser. No. 62,783
Int. Cl. B01k 3/04
U.S. Cl. 204—211 3 Claims



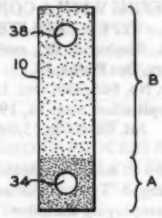
An apparatus for the hard-chromium plating elongated bodies of large surface area wherein the body is advanced in

stages through the chromium plating bath relative to the anode, and chromium plating is carried out during the transverse in which the substrate is stationary. A pair of equipotential screens is provided in axially spaced relationship at each end of the plating zone, at least one of the screens being positioned upon the previously coated portion of the substrate at a location in which the prior plating has reached its maximum thickness.

3,720,597
MULTIPOROSITY ELECTRODE FOR ELECTROCHEMICAL CONVERSION

Benedict H. Ashe, Jr., Bartlesville, and William V. Childs, Austin, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 739,510, June 24, 1968, Pat. No. 3,558,450. This application July 28, 1970, Ser. No. 58,952
Int. Cl. B01r *3/04*
U.S. Cl. 204—284 **14 Claims**

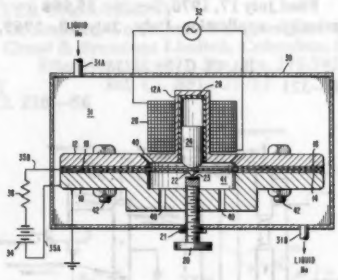


In an electrochemical process, the reaction takes place within the confines of a porous electrode element in which the pores of the lower portion have a lower effective size than the pores of the upper portion.

3,720,598
CRYOGENIC ARC FURNACE AND METHOD OF FORMING MATERIALS

William A. Thompson, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,086
Int. Cl. C22d ; B23k *9/00*
U.S. Cl. 204—328 **13 Claims**



This disclosure provides apparatus for achieving rapidly a high temperature arc discharge in the region of a material to be vaporized. Surrounding the region of the arc discharge is a cryogenic fluid against which both the arc and the vaporized produces exert pressure. The effect of the presence of the cryogenic fluid adjacent to the high temperature region is to constrain the arc discharge strongly and to quench rapidly the material in the vapor state to the solid state. As a consequence of the localized heating and rapid quenching in the cryogenic arc furnace, special materials and physical states thereof are achieved. Illustratively, chemical products and amorphous conditions of materials are achieved for the practice of this disclosure not heretofore contemplated in the practice of the prior art.

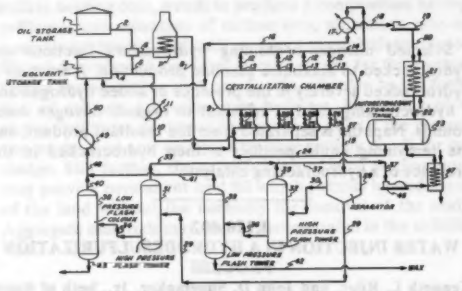
For an embodiment of this disclosure, the material to be vaporized is ab initio established in location for a capacitive arc discharge and the capacitor plates are caused by mechanical shock to approach each other so that the discharge occurs preferentially at a preselected path on the material.

Practice of this invention is readily extrapolated to the very high temperatures required for fusion experiments in liquid deuterium, e.g., greater than 100,000°C.

3,720,599
CONTINUOUS DEWAXING OF OILS BY IN SITU REFRIGERATION

Leslie R. Gould, Sarnia, Ontario, Canada, assignor to Esso Research and Engineering Company

Continuation of Ser. No. 829,467, June 2, 1969, abandoned. This application May 3, 1971, Ser. No. 139,835
Int. Cl. C10g *43/08*
U.S. Cl. 208—33 **17 Claims**

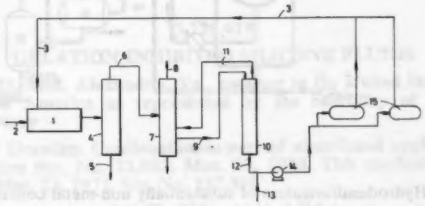


An improved process for dewaxing petroleum oil stocks. Feed oil, with or without a dewaxing solvent, is both mixed and cooled by direct contact with boiling liquid refrigerant, with required residence time in a vessel containing sufficient stages to effect required wax crystal growth.

3,720,600
CRACKING OF HYDROCARBONS

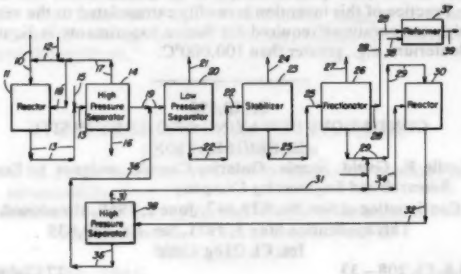
Geoffrey Harry Mansfield and Malcolm Lehany Watts, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 1, 1971, Ser. No. 119,708
Claims priority, application Great Britain, Mar. 2, 1970, 9,835/70
Int. Cl. C07c *3/30*; C23f *11/10*
U.S. Cl. 208—47 **11 Claims**



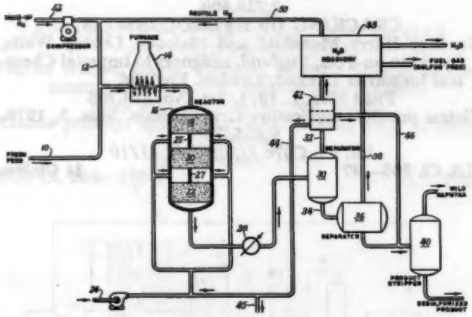
A hydrocarbon feedstock, for example, naphtha, is cracked in the presence of steam which has been produced in the presence of an alkanolamine, preferably ethanolamine. The process reduces corrosion in the steam-raising equipment.

3,720,601
HYDROCRACKING PROCESS
Harry L. Coonradt, Woodbury, and Paul W. Snyder, Jr., Pitman, both of N.J., assignors to Mobil Oil Corporation
Filed July 9, 1969, Ser. No. 840,280
Int. Cl. C10g 13/02, 37/04; C01b 33/28
U.S. Cl. 260—111 6 Claims



Selected nitrogen-containing hydrocarbon fractions are hydrocracked to maximize gasoline production. A fraction is hydrocracked severely in the presence of added hydrogen and a hydrocracking catalyst resistant to organic nitrogen compounds. Naphtha is separated from the resultant product, and the remaining liquid product is then hydrocracked in the presence of a hydrocracking catalyst.

3,720,602
WATER INJECTION IN A HYDRODESULFURIZATION PROCESS
Kenneth L. Riley, and John D. Shoemaker, Jr., both of Baton Rouge, La., assignors to Esso Research and Engineering Company
Filed Feb. 26, 1971, Ser. No. 119,222
Int. Cl. C10g 23/02
U.S. Cl. 208—216 19 Claims



Hydrodesulfurization of substantially non-metal containing hydrocarbon feed, such as vacuum gas oils, virgin gas oils and cycle oils, is carried out in a contacting step with hydrogen and a catalyst of a Group VI-B and/or Group VIII metal which also contains 0.1–15 percent be weight of a Group VB metal. Water, in the form of either liquid or vapor, is injected in the desulfurization reaction to effect cooling and to enhance catalyst activity.

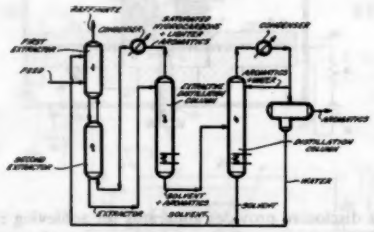
3,720,603
METAL RECOVERY PROCESS
William K. T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Feb. 5, 1971, Ser. No. 113,109
Int. Cl. C10g 17/00
U.S. Cl. 208—251 R 5 Claims

Metallic components are recovered from a hydrocarbon mixture by (1) forming the sulfides of the metals, (2) converting the sulfides to metal carbonyls and (3) separating the carbonyls from the hydrocarbon mixture. Especially adaptable for the recovery of a colloidal metal catalyst from the reaction product effluent of a slurry process for the conversion of heavy hydrocarbonaceous charge stocks. The effluent, in which the metal exists in the sulfide form, is treated with carbon monoxide which produces the carbonyl. The metal carbonyl is capable of subsequent use as the precursor of the colloidal metal catalyst.

3,720,604
ADSORBING OLEFINS WITH A COPPER-EXCHANGED TYPE Y ZEOLITE
Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plains, Ill.
Division of Ser. No. 865,980, Oct. 13, 1969, Pat. No. 3,649,177. This application Aug. 16, 1971, Ser. No. 172,322
Int. Cl. C10g 25/04
U.S. Cl. 208—310 5 Claims

A new composition of matter, a method for the preparation of a copper-exchanged Type Y structured zeolite and a separation process employing the same. The zeolite adsorbent is prepared by a procedure employing an aqueous ion-exchange step and a final step including contacting the copper-exchanged zeolite with a mixture containing a cuprous salt and a hydrocarbon. The process involves the selective separation of olefinic hydrocarbons from saturated hydrocarbons employing a Type Y structured zeolite containing copper cations at the cationic exchange sites within the zeolite. The olefins are selectively retained by an adsorbent and are removed in a concentrated form by a desorption step.

3,720,605
PROCESS FOR THE EXTRACTION OF AROMATIC HYDROCARBONS BY KETO AND ALDO-MORPHOLINES
Giancarlo Paret, Milan, and Ermanno Cinelli, San Donato Milanese, both of Italy, assignors to Snam Progetti S.P.A., Milan, Italy
Filed July 17, 1970, Ser. No. 55,908
Claims priority, application Italy, July 18, 1969, 19812 A/69
Int. Cl. C10g 21/28
U.S. Cl. 208—321 7 Claims



A multi-stage countercurrent process for the solvent extraction of aromatic hydrocarbons from a mixed feed stock is disclosed wherein the feed is contacted with a keto- or aldomorpholine and extracted in a first stage, extract from the first stage is purified in a second stage by countercurrent contact with an overhead fraction from a third stage wherein the

second stage extract is distilled, and rectification is effected in a fourth stage wherein water is refluxed and a part of the water, obtained as reflux free of solvent, is vaporized and recycled to the bottom of this rectification stage to recover the sensible heat of lean solvent.

3,720,606

DEODORIZING AND SEWAGE TREATMENT FORMULATION

Ronald E. Horney, Summerfield, and Hiram T. Jackson, Greensboro, both of N.C., assignors to Biogenics Company, Inc., Greensboro, N.C.

Filed Feb. 18, 1971, Ser. No. 116,606
Int. Cl. C02c *1/40*
U.S. Cl. 210—11 5 Claims

A formulation comprising an aqueous solution containing one or more aerobic, mesophilic, spore-forming bacterial agents selected from Group I of the genus Bacillus to induce aerobic decomposition of odor causing waste matter to a form free of odor; and an odor suppressing agent including a perfumant initially effective to suppress and/or mask any undesirable odors that might be released by the waste materials before and during decomposition thereof, and a carrier containing an emulsifier into which the perfumant is dissolved.

3,720,607

REVERSE OSMOSIS PROCESS EMPLOYING POLYBENZIMIDAZOLE MEMBRANES

Willard C. Brinegar, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed April 15, 1970, Ser. No. 28,940
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 10 Claims

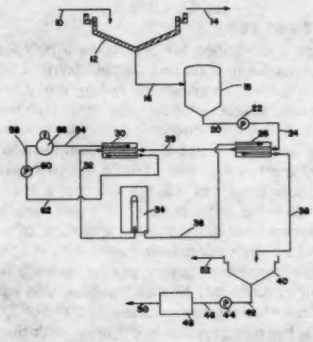
A process for desalinization of water by reversed osmosis is disclosed particular utility in the separation of components of a solution. A solution of a polybenzimidazole polymer is deposited upon a support to form a wet film, an amount of solvent is evaporated from the wet film sufficient to allow the formation of a thin layer of higher density at the exposed surface of the film, and the resulting film is washed to remove residual solvent and thereby form a semipermeable polybenzimidazole membrane which membrane is then employed in the reverse osmosis process.

3,720,608

METHOD AND APPARATUS FOR CONDITIONING AND DISPOSING OF ALUM SLUDGE FROM WATER TREATMENT

James D. Stauffer, Columbus, Ohio, assignor to Bonham, Grant & Brundage Limited, Columbus, Ohio

Filed Sept. 8, 1971, Ser. No. 178,702
Int. Cl. B01d *21/01*
U.S. Cl. 210—56 4 Claims



A process and apparatus for Pollution Abatement by the transfer, conditioning and disposing of alum sludge. An apparatus is disclosed consisting of (1) a holding tank which receives solids from the clarification settling tanks of a water or a waste water purification plant; (2) a system of heat exchangers, for heat recovery and auxiliary heat application to raise the temperature of the incoming sludge; (3) a detention vessel to provide for a reaction time; (4) a decant tank; and (5) a dewatering unit for separation of the solids from the conditioned sludge.

3,720,609

PROCESS FOR TREATING AQUEOUS CHEMICAL WASTE SLUDGES AND COMPOSITION PRODUCED THEREBY

Charles L. Smith, Conshohocken, and William C. Webster, Warminster, both of Pa., assignors to G. & W.H. Corson, Inc., Plymouth Meeting, Pa.

Filed April 17, 1970, Ser. No. 29,561
Int. Cl. C02c *5/02*
U.S. Cl. 210—59 16 Claims

Waste sludges containing small amounts of certain types of reactive materials are treated by adding to such sludges materials capable of producing aluminum ions, lime and/or sulfate bearing compounds to produce a composition having a sufficient concentration of sulfate ions, aluminum ions and equivalents thereof, and calcium ions and equivalents thereof. Fly ash is preferred source of aluminum ions for this purpose. Over a period of time such compositions harden by the formation of calcium sulfo-aluminate hydrates. Hardening of the sludge facilitates its disposition and may permit the reclamation of the land now occupied by large settling ponds for such sludge. Still further, the solidification of such settling ponds may provide permanent land fill which permits immediate use of the land without the necessity for removal of the sludge. Aggregate materials may also be incorporated in the solidified waste.

3,720,610

THINNER FOR DRILLING FLUIDS

Albert Erasmus, Landenburg, Germany, assignor to Benckiser-Knapsack GmbH, Ludwigshafen/Rhine, Germany

Filed June 9, 1970, Ser. No. 44,888
Claims priority, application Germany, June 12, 1969, P 19 29 968.4
Int. Cl. C10m *3/48*
U.S. Cl. 252—8.5 C 10 Claims

The thinner according to this invention added to drilling fluids used for drilling for petroleum or natural gas is gluconic acid and/or its heavy metal salts and/or its alkali metal-heavy metal salts, especially chromic gluconate and/or an alkali metal chromic gluconate.

3,720,611

GELATION INHIBITED SILICONE FLUIDS

A. D. Britt, Alexandria, Va., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Continuation-in-part of abandoned application Ser. No. 22,083, Mar. 23, 1970. This application Mar. 23, 1971, Ser. No. 127,380
Int. Cl. C10m *3/46, 3/24*
U.S. Cl. 252—18 9 Claims

Silicone fluids containing a small amount of alkali metal salt of trifluoroacetic acid have reduced tendency to form gelatinous solids as they decompose at high temperature. The function of said metal salt is improved by the addition of a small amount of sodium hydroxide.

3,720,612

SYNTHETIC ESTER LUBRICATING OIL COMPOSITIONS

David S. Bosniack, Edison, and Stephen J. Metro, Scotch Plains, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 836,613, June 25, 1969, Pat. No. 3,585,137. This application May 11, 1970, Ser. No. 36,436The portion of the term of this patent subsequent to June 15, 1988, has been disclaimed.

Int. Cl. C10m *3/40*, *3/30*

U.S. Cl. 252—32.5 15 Claims

Synthetic ester lubricating oils made from saturated aliphatic monocarboxylic acids and neopentyl polyols and containing small amounts of amine addition salts of acid phosphate esters, aminobenzamides, and neutral phosphate esters.

3,720,613

SYNERGISTIC MIXTURE OF ZINC DIALKYLDITHIOPHOSPHATE AND ZINC DIALKYLPHENOXYETHYLDITHIOPHOSPHATE

Thomas O. Brown, Nederland, and James H. Cupit, Port Arthur, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,396

Int. Cl. C10m *1/48*, *3/42*

U.S. Cl. 252—32.7 E 6 Claims

A synergistic mixture comprising zinc dialkyldithiophosphate and zinc dialkylphenoxyethyldithiophosphate, said mixture provides improved oxidation resistance, nitration inhibition and antiwear properties to a wide variety of organic oil substrates.

3,720,614

POLYPHENYL THIOETHER LUBRICATING COMPOSITIONS

Frank S. Clark, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 25, 1970, Ser. No. 75,751

Int. Cl. C10m *1/46*, *1/38*

U.S. Cl. 252—46.7 7 Claims

Lubricating compositions comprising polyphenyl thioether, polyphenyl ethers-thioethers or mixtures thereof and containing small amounts of trichloroacetic acid have improved lubricating properties. These compositions are useful as lubricants over wide temperature ranges.

3,720,615

OIL-SOLUBLE RUST PREVENTIVE COMPOSITION

Kaichi Izumi, and Takao Watanabe, both of Tokyo, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1970, Ser. No. 61,850

Claims priority, application Japan, Aug. 11, 1969, 44/63464

Int. Cl. C10m *1/26*, *1/32*, *1/40*

U.S. Cl. 252—33 5 Claims

An oil-soluble rust preventive composition consists essentially of (A) a polycarboxylic acid having seven to 44 carbon atoms and 2 or 3 carboxyl groups or a partial ester of said acid with analiphatic alcohol having one to 18 carbon atoms and (B) an aliphatic tertiary amine having three hydrocarbon groups, each of which has at least one to 20 carbon atoms and at least one of which has six to 20 carbon atoms. The weight ratio of (A) to (B) is in the range of 95:5 to 5:95. The composition, when added to hydrocarbon oil, provides improved rust preventive characteristics and improved demulsibility, particularly when the oil contains a dispersant of the metal salt type.

3,720,616

HYDROXYBENZOTRIAZOLES AS METAL DEACTIVATORS

Donald Richard Randell, Stockport, and Ernest Alfred Cox, Urmston, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 745,115, July 16, 1968, abandoned. This application Jan. 14, 1971, Ser. No. 106,532

Claims priority, application Great Britain, July 21, 1967, 33536/67

Int. Cl. C10m *1/20*, *1/32*

U.S. Cl. 252—51.5 R 9 Claims

4-Hydroxy-5-alkyl-benzotriazoles are described as useful corrosion or tarnish inhibitors on metal surfaces, especially on copper, and as metal deactivators in functional fluids. Compositions containing the novel benzotriazoles or 4-hydroxybenzotriazole and a process for making these compounds in a particularly advantageous manner are also described.

3,720,617

AN ELECTROSTATIC DEVELOPER CONTAINING MODIFIED SILICON DIOXIDE PARTICLES

Arun K. Chatterji; Marianne Custozzo; Demosthenes K. Kiriazides, all of Webster, N.Y.; John J. Russell, Jr., Tyrone, Pa., and John P. Serio, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 20, 1970, Ser. No. 39,856

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 7 Claims

A developer material comprising colored toner particles having a particle size less than about 30 microns and a minor proportion of submicroscopic silicon dioxide additive particles having at least a portion of the silicon atoms on the outside surface of the silicon dioxide particles directly attached through an oxygen atom to another silicon atom which is in turn directly attached through a carbon linkage to one to three organic groups.

3,720,618

METHOD OF PRODUCING A POWDER OF COBALT-CONTAINING NEEDLE-LIKE SHAPED GAMMA-FERRIC OXIDE PARTICLES AS MAGNETIC RECORDING MATERIAL

Hideo Toda; Shigeki Shimizu, and Hisato Ihara, all of Hiroshima, Japan, assignors to Toda Kogyo Co. Ltd., Hiroshima, Japan

Filed Feb. 25, 1971, Ser. No. 118,654

Claims priority, application Japan, May 8, 1970, 45/39077

Int. Cl. C04b *35/00*

U.S. Cl. 252—62.56 5 Claims

Procedure is described for producing a powder of cobalt-containing, needle-like shaped gamma-ferric oxide, γ-Fe_2O_3 particles useful for magnetic recording and the making of magnetic tape, magnetic sheet and magnetic disk with the powder which has high coercive force, high remanence and good dispersibility, uniform chemical composition, the cobalt uniformly dispersed on each particle, no twin particle structure, a particle length of 0.2–0.5 micron, a specific surface area of 15–25 m^2/g and a content of anion such as SO_4^{2-} less than 0.1 percent. Alkali is added to a mixture of a ferrous salt solution and a cobalt salt solution until the pH exceeds 11, an oxidizing gas of constant oxygen partial pressure is blown into the solution as uniformly fine air bubbles, also causing agitation while maintaining the solution at 30°–50°C, whereupon alpha-Fe_2O_3 hydrate particles precipitate with the cobalt ions in solid solution, and by washing, dehydrating, reducing and oxidizing conversion into the desired γ-Fe_2O_3 particles results.

3,720,619

LIQUID DEVELOPER FOR ELECTROPHOTOGRAPHY CONTAINING THE REACTION PRODUCT OF A DYESTUFF AND A FATTY ACID

Eiichi Inoue, Tokyo, Yasuo Ueda, Kobe-shi, and Tatsuo Aizawa, Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,626
Claims priority, application Japan, Dec. 18, 1968, 43/92,573
Int. Cl. G03g 9/04
U.S. Cl. 252—62.1 5 Claims

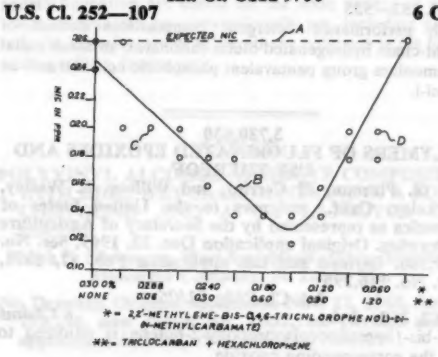
A liquid developer for electrophotography which comprises a dispersion of a salt-forming reaction product between at least one dyestuff or dyestuff base containing amino groups and at least one fatty acid of not less than 8 carbon atoms, in a high electric resistance liquid as carrier, said fatty acid being soluble in said carrier liquid; characterized in that a salt formed from said fatty acid and said dyestuff or dyestuff base is insoluble in said high electric resistance liquid, and that said fatty acid is present in an amount of at least 4 mols per mol of said dyestuff or dyestuff base, the amount of said fatty acid being sufficient to disperse said salt in the fine divided state stably in the carrier liquid but being not so excessive as to cause any bleeding of an image to be formed.

3,720,620

SYNERGISTIC ANTISEPTIC COMPOSITIONS

David Taber, 2000 Lincoln, Evanston, Ill. 62242, and Leo A. Raphaelian, 2640 Laurel Lane, Wilmette, Ill. 60091

Filed July 20, 1970, Ser. No. 56,272
Int. Cl. C11d 9/50
U.S. Cl. 252—107 6 Claims



Compositions possessing antibacterial activity through the effect of synergistic mixtures of 2,2'-methylene-bis-(3,4,6-trichlorophenol)-di-(N-methylcarbamate), triclocarban and hexachlorophene.

3,720,621

AQUENOUS DETERGENT COMPOSITIONS

Alfred Smeets, Tirlemont, Belgium, assignor to Citrex, S. A., Saint-Gilles-lez-Bruxelles, Belgium

Filed June 15, 1970, Ser. No. 46,472
Claims priority, application Great Britain, June 17, 1969, 30,640/69
Int. Cl. C11d 3/04, 7/00
U.S. Cl. 252—135 12 Claims

The present invention provides a homogeneous liquid composition containing by weight:

a. from 14 to 35 percent of sodium tripolyphosphate,
b. from 0.1 to 50 percent at least of a potassium and/or ammonium salt of an inorganic or organic acid,
c. from 15 to 85.9 percent of water.

The composition is especially useful as a detergent for nonporous surfaces and textile materials.

3,720,622

GENERATION OF LIGHT FROM THE DECOMPOSITION OF DIOXETANEONES IN THE PRESENCE OF A FLUORESCER

Laszlo Joseph Bollyky, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 2, 1970, Ser. No. 415
Int. Cl. C09k 3/00
U.S. Cl. 252—188.3 7 Claims

A bright chemiluminescent light emission is obtained when ketene or substituted ketenes such as diphenylketene are reacted with singlet oxygen or a precursor thereof such as triphenylphosphite-ozone complex in the presence of a fluorescer.

3,720,623

ENCAPSULATED LIQUID CRYSTALS

James V. Cartmell, and Donald Churchill, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 8, 1971, Ser. No. 113,716
Int. Cl. B01j 13/02
U.S. Cl. 252—316 6 Claims

A mixture of cholesteric liquid crystal material such as cholesteryl nonanoate and nematic liquid crystal material such as methoxybenzilidene-p-n-butylaniline is disclosed. The mixture can be encapsulated and employed in temperature-sensitive visual display devices. The addition of nematic liquid crystal material to cholesteric liquid crystal material enhances the brightness of films employing cholesteric liquid crystal material and prolongs the usable life of the films.

3,720,624

CATIONIC SURFACE ACTIVE SUBSTANCE, METHOD FOR MANUFACTURING SAME

Shigeyuki Suzuki, Sagamihara-shi, Kanagawa-ken; Kotaro Kumakoto, Setagaya-ku, Tokyo-to; Isamu Kaneda, Edogawa-ku, Tokyo-to, and Shoushiro Sakai, Chigasaki-shi, Kanagawa-ken, all of Japan, assignors to Kurita Water Industries Limited, Koraibashi, Higashi-ku, Osaka-shi, Osaka-fu, Japan

Filed July 17, 1970, Ser. No. 55,961
Claims priority, application Japan, July 18, 1969, 44/56559
Int. Cl. B01f 17/16, 17/18
U.S. Cl. 252—357 4 Claims

Water soluble substance having cationic surface active properties manufactured by subjecting polycyclic condensation compounds (viz, a mixture of high aromatic hydrogen compounds selected from the group consisting of tarry, pitchy and resinous substances obtained by heat-treating petroleum type hydrocarbons, coal tar or coal pitch at a temperature range of 700°C. to 2000°C. for a time period from one-tenth second to 1/1000 second) to halomethylation and quaternization with a thiourea, trialkylamine or pyridine. The substance is useful for flocculation of solid particles suspending in water or organic substances dissolved in water.

3,720,625

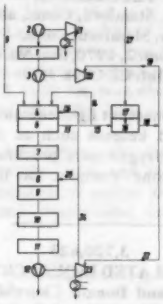
PROCESS FOR PREPARING HYDROGEN OR NITROGEN AND HYDROGEN UNDER PRESSURE

Ernst Kapp, Frankfurt, and Paul Becker, Eschborn, both of Germany, assignors to Metallgesellschaft, Frankfurt am Main, Germany

Filed Nov. 5, 1970, Ser. No. 87,032
Claims priority, application Germany, Nov. 19, 1969, P 19 58 033.7
Int. Cl. C01b 2/00, 2/30, 1/03
U.S. Cl. 252—377 6 Claims

Process for producing hydrogen and/or a hydrogen-nitrogen mixture for the synthesis of ammonia, which process comprises a gasification of solid or liquid sulfur-containing fuels with oxygen and steam; a desulfurization of the crude gas; conversion of the carbon monoxide contained in the raw gas

with hydrogen to form carbon dioxide and hydrogen in two stages using an iron oxide-chromium oxide catalyst and temperatures of 350°–500°C in the first stage and a copper-con-



taining catalyst and temperatures of 190°–280°C in the second stage; scrubbing the gas which is now rich in hydrogen to remove carbon dioxide; and a final purification of the remaining built up raw hydrogen by a removal of residual carbon dioxide and carbon monoxide.

3,720,626

ELUTION PROCESS FOR THE REGENERATION OF SPENT ACTIVATED CARBON

Jacques Raphael Benzaria, Chambly, and Claude Zundel, Neuilly S/Seine, both of France, assignors to Societe Anonyme: Degremont Societe Generale d'Epuration et d'Assainissement, Saint-Cloud Rueil Malmaison, France

Filed June 19, 1970, Ser. No. 47,599

Claims priority, application France, June 20, 1969, 6920827

Int. Cl. B01j *11/02*

U.S. Cl. 252—413 **17 Claims**

Improvement in the process for the regeneration of spent activated carbon combining an aqueous alkaline solution and an organic solvent, such as a lower alcohol.

The spent carbon is first contacted in a column under practically static conditions, and at between 25° and 90°C for 30 minutes to 2 hours with an aqueous alkaline solution, preferably 0.5 to 25 percent by weight sodium hydroxide. An alkaline treatment prepares the elution action of the solvent. The solvent is a lower alcohol, preferably isopropanol combined with water. The solvent is then removed by steam and the carbon is regenerated by an acid treatment. Complete regeneration is obtained.

3,720,627

READY-TO-USE LEAD SULFIDE CATALYST

Howell R. Jarvis, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,464

Int. Cl. B01j *11/74*

U.S. Cl. 252—430 **6 Claims**

A ready-to-use lead sulfide catalyst for use in the Bender (a registered trademark) sweetening process of sour petroleum products. The lead sulfide catalyst comprises a carrier of particulate inert solids and a relatively dry exposed coating residing about the exterior surface of the solids. The coating is formed of a mixture of sodium sulfide and lead oxide reacted in the presence of an aqueous solution of sodium silicate binder. Preferably, the sodium sulfide is introduced in a stoichiometric amount relative to the lead oxide in the mixture. The catalyst can be protected from oxidizing gases or moisture by a hydrocarbon soluble covering enclosing the coating on the carrier. For example, the coating may be a high-melting point natural, petroleum or synthetic wax.

3,720,628

HYDROCARBON ISOMERIZATION CATALYST AND PROCESS

John C. Hayes, Palatine, Roy T. Mitsche, Island Lake, Richard E. Rausch, Mundelein, and Frederick C. Wilhelm, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 34,539, May 4, 1970. This application July 17, 1970, Ser. No. 56,008

Int. Cl. B01j *11/78, 11/40*

U.S. Cl. 252—442 **3 Claims**

Isomerizable hydrocarbons such as paraffins, cycloparaffins, olefins, and alkyl aromatics are isomerized by utilizing a catalytic composite containing catalytically effective amounts of a platinum group component and a Group IV–A metallic component combined with a carrier material of alumina and a finely divided crystalline aluminosilicate such as mordenite. Also disclosed is a catalytic composite comprising a platinum group component, a Group IV–A metallic component and a Friedel-Crafts metal halide component combined with a carrier material of alumina and a finely divided crystalline aluminosilicate.

3,720,629

DETERGENT COMPOSITION CONTAINING HYDROGENATED ALPHA OLEFIN SULFONATES

Samuel H. Sharman, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 685,948, Nov. 27, 1967, Pat. No. 3,565,809. This application Feb. 27, 1970, Ser. No. 15,214

Int. Cl. C11d *3/065, 1/12*

U.S. Cl. 252—535 **7 Claims**

High performance detergent compositions consist of straight-chain hydrogenated olefin sulfonates, an alkali metal or ammonium group pentavalent phosphoric acid salt and an alkanol-l.

3,720,630

POLYMERS OF FLUORINATED EPOXIDES AND USE THEREOF

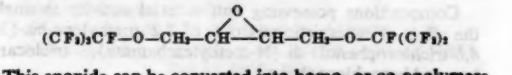
Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Dec. 22, 1969, Ser. No. 887,380. Divided and this application Feb. 17, 1971, Ser. No. 116,290

Int. Cl. C08g *23/06*

U.S. Cl. 260—2 A **6 Claims**

1,4-bis-(heptafluoroisopropoxy-2-butene is oxidized to form the corresponding epoxide



This epoxide can be converted into homo- or co-opolymers which are useful for enhancing the repellency of fibrous substrates, e.g., fabrics made from natural or synthetic fibers.

3,720,631

SHEET MATERIALS OF EXCELLENT DURABILITY AND METHOD OF MANUFACTURING THE SAME

Osamu Fukushima; Kazuo Nagoshi, and Toshiaki Iwamoto, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation-in-part of Ser. No. 701,101, Jan. 29, 1968, abandoned. This application Sept. 28, 1970, Ser. No. 76,235

Claims priority, application Japan, Feb. 10, 1967, 42/8691

Int. Cl. C08g *22/44, 22/08*

U.S. Cl. 260—2.5 AY **7 Claims**

A highly durable sheet material using for synthetic leather is prepared by dipping a layer of a solution of a polyurethane

elastomer which is derived from both a polyester having a molecular weight of 800 to 3000 and a polyether having a molecular weight of 800 to 3000 as soft segments, the molar ratio of the polyester to the polyether being from 10:90 to 65:35, and in which elastomer the weight of nitrogen atoms contained in the urethane groups ranges from 3.8 to 6 percent of the total weight of the polyurethane elastomer, into a coagulation bath composed of a solvent and a non-solvent for the polyurethane elastomer at a ratio by weight ranging from 20:80 to 70:30, thereby coagulating said layer of the elastomer into a microporous structure.

3,720,632

POLYISOCYANURATE-CONTAINING ELASTOMERS AND FOAMS

Perry A. Argabright, Sedalia, Colo.; Vernon J. Sinkley, Invergrove, Minn., and Brain L. Phillips, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 840,843, July 10, 1969, abandoned, which is a division of Ser. No. 611,588, Jan. 25, 1967, Pat. No. 3,458,448. This application Sept. 30, 1970, Ser. No. 76,975

Int. Cl. C08g *22/44, 22/22;* **C08q** *22/28*

U.S. Cl. 260—2.5 AW **9 Claims**

Polyisocyanate compounds containing isocyanurate rings are formed by reacting an organic dichloride with a metal cyanate in the conjoint presence of a halide catalyst and an aprotic solvent.

The present invention also comprises new isocyanurate-containing isocyanate compositions. Both the new and conventional isocyanates produced by the processes of the present invention are useful for the wide variety of uses to which isocyanates are conventionally put, including particularly the manufacture of polyurethane polymers in the form of coatings, films, foams, etc.

3,720,633

POLYVINYL ALCOHOL ADHESIVE COMPOSITION WITH HIGH WET TACK CONTAINING A BORON COMPOUND AND A CIS 1,2-POLYOL COMPOUND

Ralph F. Nickerson, West Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Nov. 12, 1968, Ser. No. 775,170, now Patent No. 3,632,786. Divided and this application Apr. 21, 1971, Ser. No. 136,208

Int. Cl. B32b *27/04;* **C08b** *25/02;* **C08d** *9/06*

U.S. Cl. 260—17.4 ST **4 Claims**

Disclosed herein is an adhesive composition with high wet tack, which comprises:

(A) a polyvinyl alcohol resin,

(B) a water soluble boron compound, and

(C) a polyol selected from the group consisting of cis 1,2-polyols and certain 1,3-polyols.

3,720,634

ORGANIC HEXAFLUOROPHOSPHATES, ARSENATES OR ANTIMONATES AS ACCELERATORS FOR CURING EPOXY RESINS

Gary L. Statton, Wallingford, Pa., assignor to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Filed Jan. 19, 1971, Ser. No. 107,850

Int. Cl. C08g *45/00*

U.S. Cl. 260—18 PF **18 Claims**

A process for preparing curable thermoset resins from polyepoxides and organic anhydrides with or without polyols in the presence of organic hexafluorophosphates, hexafluoroarsenates or hexafluoroantimonates which serve as accelerators resulting in shorter gel times with more thorough cure at lower temperatures than obtained with presently recognized accelerators.

3,720,635

POLYESTER MOULDING AND COATING MASSES WHICH CAN BE CURED BY ULTRAVIOLET IRRADIATION

Wolfgang Metzner; Karl Fuhr; Hans Rudolph; Hermann Schnell, and Hans-Georg Heine, all of Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 810,370, March 25, 1969, abandoned. This application May 5, 1971, Ser. No. 140,581

Claims priority, application Germany, Apr. 16, 1968, P 17 69 168.8

Int. Cl. C08f *21/02, 43/08, 1/20*

U.S. Cl. 260—862 **2 Claims**

Moulding and coating masses which can be cured by UV-irradiation and consist of mixtures of unsaturated polyesters and copolymerizable monomeric compounds with a content of phenylthio derivates of acetophenones as photosensitizers.

3,720,636

AQUEOUS DISPERSION PAINTS OF COPOLYMERS OF DIESTERS OF FUMARIC ACID WITH VINYL COMPOUNDS

Johannes Wollner, Kapellen, and Wolfgang Tietz, Hamburg 90, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, West Germany

Filed Sept. 24, 1970, Ser. No. 75,247

Claims priority, application Germany, Oct. 1, 1969, P 19 49 497.4

Int. Cl. C08f *29/38*

U.S. Cl. 260—29.6 T **4 Claims**

Dispersion paint compositions prepared by emulsion-copolymerization of fumaric acid esters of aliphatic alcohols with aliphatic and/or aromatic vinyl compounds, olefins or olefinic-unsaturated compounds.

3,720,637

OLEFIN-MALEIC ANHYDRIDE CROSSLINKED TERPOLYMERS

Robert Bacskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed March 29, 1971, Ser. No. 129,222

Int. Cl. C08f *19/20*

U.S. Cl. 260—29.7 H **5 Claims**

Crosslinked terpolymers of isobutene-maleic anhydride and divinylbenzene and their alkali metal, amide ammonium, amide amine, ammonium and amine salts and aqueous dispersions thereof.

3,720,638

COMPOSITIONS OF ANIONICALLY POLYMERIZED POLYCAPROLACTAM PLASTICIZED WITH HEXAMETHYLPHOSPHOROTRIAMIDE

John M. Kolyer, Convent, and Albert A. Kveglis, Pine Brook, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,391

Int. Cl. C08g *51/50*

U.S. Cl. 260—30.6 R **6 Claims**

The impact strength of compositions of anionically polymerized polycaprolactam (nylon 6) is improved by carrying out the polymerization reaction in the presence of hexamethylphosphorotriamide.

3,720,639

FLUORINATED POLYOLS

James R. Griffith, Riverdale Heights, Md., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Continuation-in-part of application Ser. No. 13,172, Feb. 20, 1970. This application June 24, 1971, Ser. No. 156,492

Int. Cl. C08g 51/34

U.S. Cl. 260—33.4 EP 15 Claims

A fluorinated polyol is formed from the polymerization reaction of a diglycidyl ether with a fluorinated dihydroxy hydrocarbon. The polymerization may be carried out with a tertiary amine catalyst and with or without a polar solvent. The reaction may take place in-situ as a coating on a surface, or as an adhesive between laminates, or as a molding material within a mold. The product is useful in applications requiring the hydrophobic properties of fluorine in combination with the adhesive and molding properties of epoxy resins.

3,720,640

SAND CONSOLIDATION METHOD AND COMPOSITION

Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 887,731, Dec. 23, 1969, Pat. No. 3,592,268. This application Nov. 27, 1970, Ser. No. 93,396

Int. Cl. C08q 51/28

U.S. Cl. 260—336 R 4 Claims

Method of and composition for the treatment of unconsolidated sandy formations to stabilize a formation sand comprising injecting a treating composition of 10–60 percent by volume of acrolein dimer, 1 to 10 percent by volume of thionyl chloride catalyst, and 30 to 89 percent by volume of a non-aromatic petroleum solvent into said formation sand, polymerizing said dimer, and forming a fluid permeable consolidated sand in said formation.

3,720,641

PROCESS FOR PRODUCING AN IMPROVED WHOLLY AROMATIC POLYAMIDE MOLDING RESIN

Frank M. Berardinelli, 121 Rolling Hill Drive, Millington, N.J. 07946, and Saunders E. Jamison, 26 Webster Ave., Summit, N.J. 07901

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,723

Int. Cl. C08g 51/04, 51/08, 51/44

U.S. Cl. 260—37 N 14 Claims

A process of blending an aromatic polyamide resin with reinforcing fillers comprising precipitation of the polyamide resin from a dilute solution and therafter mixing the polyamide resin and reinforcing fillers together, in a liquid environment and removing the liquid.

3,720,642

USE OF MODIFIED RESINS AS BINDING AGENTS FOR MINERAL SUBSTANCES

Hans Junger, Troisdorf; Hans-Joachim Kotzsch, Rheinfelden; Hans-Joachim Vahlensieck, Wehr/Baden, and Franz Weissenfels, Siegburg, all of Germany, assignors to Dynamit Nobel AG, Postfach, Germany

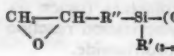
Filed Oct. 9, 1970, Ser. No. 90,174

Claims priority, application Germany, Oct. 2, 1969, P 19 49 759.7

Int. Cl. C08k 51/04

U.S. Cl. 260—37 R 3 Claims

Improvements in the strength and other characteristics of sand filled resin, particularly phenolic resin bodies by incorporating epoxy silanes of the formula:



wherein m is 2 or 3,

R and R′ are 1 to 4 carbon alkyls, and

R″ is a 1 to 8 carbon alkylene or alkylene ether in with such resin.

3,720,643

FIRE RETARDANT POLYMERIC MATERIALS

Ismat Ali Abu-Isa, Birmingham, and Harold E. Trexler, Harper Woods, Mich., assignors to General Motors Corporation, Detroit, Mich.

No Drawing. Filed June 21, 1971, Ser. No. 155,257

Int. Cl. C08f 45/04

U.S. Cl. 260—41.5 A 4 Claims

The addition of suitable minor portions of talc, chlorinated polyethylene and antimony trioxide to polypropylene resins, styrene-acrylonitrile copolymer resins or acrylonitrile-butadiene-styrene resins renders these polymers nonburning. The presence of the talc contributes synergistically to the flame retardancy of the compositions permitting a reduction in the quantities of the chlorine-containing and antimony-containing additives otherwise employed for this purpose.

3,720,644

POLYSILOXANES CONTAINING FLUOROALKYLAMINOALKYL GROUPS

Robert Neville Haszeldine, Disley, and Anthony Edgar Tipping, Bramhall, both of England, assignors to Minister of Aviation Supply in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 12, 1970, Ser. No. 89,081

Claims priority, application Great Britain, Nov. 12, 1969, 55,381/69

Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 E 6 Claims

This specification describes polysilsesquioxanes of the general formula

$$(R_F)_2—N—CH_2—CH_2—SiO_{1.5}\ _x$$

where R_F is a fully fluorinated lower alkyl group and x has the value of 20 to 50 and polysiloxanes of general formula

$$(R_F)_2—N—(CH_2)_m—Si—RO\ _y$$

where R_F is a fully fluorinated lower alkyl group, m is two or three, R is lower alkyl group and y has the value 3 to 16. The preparation of these polymers is also described.

3,720,645

METHOD OF OBTAINING GEL-FREE EPOXY RESINS BY FILTRATION IN THE MOLTEN STATE

Ugo Nistri, Milan; Silvio Vargiu, Sesto San Giovanni (Milan), and Mario Pitzalis, Arcore (Milan), all of Italy, assignors to Societa Italiano Resines S.p.A., Milan, Italy

Filed Nov. 5, 1970, Ser. No. 87,334

Claims priority, application Italy, Nov. 14, 1969, 24410 A/69

Int. Cl. C08g 30/04

U.S. Cl. 260—47 EP 8 Claims

Gel-free epoxy resins are obtained by filtration of the resin molten rather than in a solvent.

3,720,646

PERFLUOROPOLYETHERS MODIFIED WITH QUINONE COMPOUNDS IN THE POLYMERIC CHAIN AND PROCESS FOR THEIR PREPARATION

Dario Sianesi, Milan; Renzo Fontanelli, Roma, and Alberto Grazioli, Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed March 2, 1971, Ser. No. 120,347

Claims priority, application Italy, March 3, 1970, 21406 A/70

Int. Cl. C08g *15/00*

U.S. Cl. 260—63 HA 13 Claims

Modified perfluoropolyethers containing, within the polymeric chain, repeating units derived from a quinone compound, are obtained by reacting a peroxidic oxygen-containing perfluoropolyether with a quinone compound, either at an elevated temperature between about 100° and 350° C or under radiation with ultraviolet light at least a portion of which is in the 200–300 millimicron range, whereby the peroxidic bridges are gradually replaced by the quinone units. The reaction is believed to proceed by a free-radical mechanism. The resulting products may be linear, branched, or cross-linked, depending upon the reaction conditions, ratio of reactants, and nature of the starting materials. The products are essentially unvulcanized rubbers which can be vulcanized by common vulcanizing agents such as diamines.

3,720,647

PRODUCING P-XYLENE

Horst Gelbe, and Karl Schmid, both of Essen, Germany, assignors to Fried, Krupp, Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed July 8, 1970, Ser. No. 53,284

Claims priority, application Germany, July 9, 1969, P 19 34 721.8

Int. Cl. C07c *7/14*

U.S. Cl. 260—674 A 11 Claims

p-Xylene having a purity of more than 99 percent, preferably more than 99.5 percent by weight is produced from a liquid hydrocarbon mixture (containing approximately 15 to 25 percent by weight p-xylene and, in addition, at least one further isomeric xylene) by crystallization above the eutectic point, subsequent filtration and subsequent centrifuging.

3,720,648

WATER DILUTABLE COATING COMPOSITIONS CONTAINING PRECONDENSATES OF PHENOL RESOLS AND ETHERIFIED PHENOL RESOLS

Rolf Güldenpfennig, Bammental, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Continuation-in-part of application Ser. No. 72,200, Sept. 14, 1970, which is a continuation of application Ser. No. 666,453, Sept. 8, 1967, both now abandoned. This application Jan. 14, 1972, Ser. No. 217,969

Int. Cl. C08g *45/08*

U.S. Cl. 260—19 EP 6 Claims

Water-dilutable heat-curable coating compositions for electrophoretic deposition comprising the following components:

(I) precondensates of hydrophilic plasticizing epoxy resin partial esters with thermosetting aldehyde products formed by heating to temperatures of about 80 to 160° C. in the proportions of about 1 to 50 percent by weight of said thermosetting aldehyde products to said partial esters, said precondensates having a Gardner-Holdt viscosity of about B to Q measured at 50 percent in butyl glycol and an acid number range of 60 to 100, wherein:

(a) said hydrophilic plasticizing epoxy resin partial esters are selected from the group consisting of:

(1) the partial esters of compounds containing epoxy groups or hydroxyl groups produced by hydrolytic cleavage of said epoxy groups with at least one monocarboxylic acid and a polybasic carboxylic acid;

(2) the partial esters of compounds containing epoxy groups or hydroxyl groups produced by hydrolytic cleavage of said epoxy groups with a polybasic carboxylic acid; and

(3) mixtures of (1) and (2); wherein said polybasic carboxylic acid of (1) and (2) comprises hydrolyzed adducts selected from the group consisting of maleic acid with fatty acids and maleic anhydride with fatty acids, said fatty acids are selected from the group consisting of drying oil acids and semi-drying oil acids, the molar proportions of fatty acid to maleic acid or maleic anhydride is between about 0.9:1 and 1.1:1 and the molar proportion of free hydroxyl groups to free carboxyl groups is between about 1:0.8 and 1:1, wherein one epoxy group is calculated as two hydroxyl groups and one anhydride group is calculated as two carboxyl groups, said adducts containing no more than 3 percent free maleic anhydride; and

(b) said thermosetting aldehyde products are selected from the group consisting of

(1) phenol resols;

(2) etherified phenol resols;

(II) strong nitrogenous bases forming soaps with the said hydrophilic plasticizing epoxy resin partial esters; and

(III) water.

3,720,649

METHOD FOR PRODUCING POLYESTERS FROM BENZENEDICARBOXYLIC ACID AND ALKYLENE OXIDE

Nobuo Izawa; Yasuhiro Iizuka, and Yoshiaki Kubota, all of Osaka-fu, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1970, Ser. No. 94,165

Claims priority, application Japan, Dec. 8, 1969, 44/98775; Dec. 26, 1969, 45/1232; Dec. 26, 1969, 45/1233

Int. Cl. C08g *17/7*

U.S. Cl. 260—75 M 9 Claims

A polyester having a high quality is produced by reacting a benzendicarboxylic acid with an alkylene oxide in an aqueous medium containing an alkali metal ion of 2.7 to 10 mole per l l of water, extracting the reaction mixture with an organic solvent to separate diglycol ester, concentrating or/and crystallizing the extracted solution and then effecting polycondensation.

3,720,650

PROCESS FOR PREPARING SINTERED POWDER OF POLYAMIDE 12

Hans Joachim Schultze, Chur, Grisons, and Ruthild Henn, Domat-ems, Grisons, both of Switzerland, assignors to Inventa A.G. Fur Forschung und Patentverwertung, Zurich, Switzerland

Filed Feb. 8, 1971, Ser. No. 113,765

Int. Cl. C08g *20/42*

U.S. Cl. 260—78 L 7 Claims

In a process for preparing polyamide 12 (polydodecanoic acid amide) as sintered powder by dissolving the polyamide 12 in molten caprolactam, cooling the melt so obtained and treat-

ing it with a solvent for caprolactam, the improvement, which consists in carrying out the solvent treatment with benzene or toluene at elevated temperature.

3,720,651

METHOD OF MANUFACTURING A COPOLYMER OF A C_4 OLEFIN WITH MALEIC ANHYDRIDE

Saburo Imoto, Osamu Ohara, Hisashi Nakamoto, Hisashi Tanaka, and Ryuhei Ueeda, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,881
Claims priority, application Japan, May 1, 1970, 45/38,527; Nov. 17, 1970, 45/101,811
Int. Cl. C08f *1/08, 15/02*
U.S. Cl. 260—78.5 R 15 Claims

A method of manufacturing a copolymer of a C_4 olefin with maleic anhydride is provided comprising copolymerizing an olefin selected from the group consisting of isobutene and a mixture of isobutene and other hydrocarbons which contain 4 carbon atoms with maleic anhydride in a solvent containing at least 80 weight percent of isopropyl acetate or a mixture of ethyl acetate and tert-butanol.

3,720,652

POLYMERIC COMPOSITION WITH ANTI-STATIC AND ANTI-FOGGING PROPERTIES

Yoshiharu Yagi, Minoru Hino, Takanobu Noguchi, Motomu Wada, Kiyoshi Yasuno, Kou Sota, Nobuo Ito, and Yasuto Nakai, Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

No Drawing. Filed July 8, 1970, Ser. No. 53,297
Claims priority, application Japan, July 8, 1969, 44/54,309
Int. Cl. C08f *45/00*
U.S. Cl. 260—80.7 2 Claims

A polymeric composition with anti-static and anti-fogging properties comprising a polymer (for example, a polyolefin, such as polyethylene, polypropylene, and the like; a copolymer of ethylene and a polar vinyl compound, such as a copolymer of ethylene and vinyl acetate, a copolymer of ethylene and vinyl chloride, a copolymer of ethylene and an acrylic acid ester, and the like; an ABS resin; a polystyrene, or a synthetic rubber, such as SBR, BR and EPDM), and at least one of N-(2-hydroxyethyl)stearylamine and N-(2-hydroxyethyl)oleylamine or a mixture of at least one of N-(2-hydroxyethyl) stearylamine and N-(2-hydroxyethyl)oleylamine and at least one of N,N-bis-stearyl-2-ethanolamine and N,N-bis-oleyl-2-ethanolamine is disclosed.

3,720,653

COLORED INTERPOLYMERS OF AN EPOXY COMPOUND, VINYLPYRROLIDONE AND VINYL ACETATE

Gregoire Kalopissis and Andre Viout, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

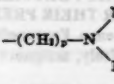
No Drawing. Continuation-in-part of application Ser. No. 549,446, May 12, 1966. This application Jan. 25, 1971, Ser. No. 109,693

Claims priority, application France, Apr. 20, 1966, 58,324; Luxembourg, May 13, 1965, 48,591

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.72 4 Claims

A colored copolymer soluble in a solvent selected from the group consisting of water, alcohol and mixtures thereof consisting essentially of a first comonomer containing a reactive epoxy group and being selected from the group consisting of glycidyl methacrylate, glycidyl acrylate and allyl glycidyl ether, a second comonomer consisting of vinylpyrrolidone, the remaining comonomer being essentially vinyl acetate, and a dye selected from the group consisting of azo, anthraquinone and benzene dyes containing an extra-nuclear radical having the formula:



wherein R is selected from the group consisting of hydrogen, $—CH_3$ and $—C_2H_5$ and p is 2–6, said extra-nuclear radical being bonded to the aromatic nucleus of said dye through a nitrogen atom directly attached to said aromatic nucleus and said dye being bonded to said reactive epoxy group through the terminal nitrogen atom of said extra-nuclear radical.

3,720,654

MOLECULAR SIZING PROCESS FOR PREPARING LOW MOLECULAR ISOBUTYLENE-CONJUGATED POLYENE COPOLYMERS

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed May 21, 1971, Ser. No. 145,957
Int. Cl. C08d *5/00*; C08f *1/88*
U.S. Cl. 260—85.3 R 20 Claims

Low molecular weight butyl-type copolymers having narrow molecular weight distributions are prepared by contacting a higher molecular weight butyl-type copolymer, e.g., a butyl rubber, with a catalyst composition comprising a transition metal salt, an organometallic compound of a metal of Group I–A, II–A, II–B, or III–A of the Periodic Table, a proton donor, and hydrogen. The catalyst composition preferably comprises a halide of tungsten, molybdenum, or rhenium, an alkyl aluminum halide, a lower alkanol, and hydrogen.

3,720,655

FLUORINE-CONTAINING COPOLYMER COMPOSITIONS AND METHOD FOR THEIR PREPARATION

Swayambu Chandrasekaran, East Orange, and Max B. Mueller, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,185
Int. Cl. C08f *15/04, 15/06*
U.S. Cl. 260—87.5 B 3 Claims

About equimolar thermoplastic 3,3,3-trifluoro-2-trifluoromethyl propene/ethylene copolymers are prepared by copolymerizing the monomers in the presence of a free radical generating initiator. The copolymer products are melt-processable, resist attack by corrosive agents and solvents, can be formed into elastic fiber and are especially suitable for use in surface coatings having high water and oil repellency.

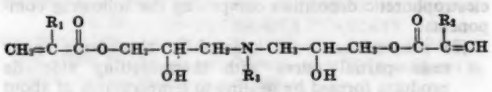
3,720,656

ANAEROBIC SEALANT COMPOSITIONS

Kazuo Manaka, Broadview, Ill., assignor to Broadview Chemical Corporation, Broadview, Ill.

No Drawing. Filed May 10, 1971, Ser. No. 142,063
Int. Cl. C08f *3/64, 3/66, 15/18*
U.S. Cl. 260—89.5 N 23 Claims

Anaerobic sealant compositions are prepared with monomers of the general formula:



wherein R_1 and R_2 are selected from the group consisting of hydrogen and lower alkyl and R_3 is selected from the group consisting of lower alkyl, lower hydroxyalkyl, cyano, and lower cyanoalkyl. These monomers are reacted with a vinyl organic acid to prepare the amine salt, and are combined with a suitable initiator, inhibitor, and accelerator to prepare an anaerobic sealant.

3,720,657

PROCESS FOR EXTRACTING PANCREAS GLANDS

Jan Willem de Vries, Oss, Netherlands, assignor to Organon Inc., West Orange, N.J.

No Drawing. Filed Nov. 6, 1969, Ser. No. 874,727
Claims priority, application Netherlands, Nov. 20, 1968, 6816599
Int. Cl. C07c *103/52*; A61k *17/04*
U.S. Cl. 260—112.7 4 Claims

The invention relates to a process for extracting insulin from pancreas glands by means of an acidified solvent for insulin and comprises extracting the pancreas with a solvent acidified with sulphuric acid, preferably at a pH between about 2.4 and 5.2, after which hydrochloric acid is added to the extraction mixture preferably till the pH is about 2.0 and the extraction is continued. In this way the amount of protein obtained is on a high level, whereas the extract can be easily separated from the tissue residue to give a clear extract and the precipitate of inactive proteins, formed by adjusting the pH of the extract to about 8, can be filtered in a very short time.

3,720,658

CHOLESTERYL P-PHENYLAZOPHENYL CARBONATE

Newton N. Goldberg, Pittsburgh, Pa., and James L. Fergason, Kent, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 820,661, April 30, 1969, Pat. No. 3,627,699. This application Aug. 9, 1971, Ser. No. 170,269
Int. Cl. C07c *107/06*
U.S. Cl. 260—207.1 1 Claim

Electromagnetic radiation in the frequency range of about 10^{15} to 10^{17} cycles per second is detected, using a cholesteric liquid-crystal material to which there has been added cholesteryl p-phenylazophenyl carbonate, a novel compound.

3,720,659

SULFATED GUMS AND METHOD OF PRODUCING SAME

Kenneth B. Guiseley, South Hope, and Philip A. Whitehouse, Rockport, Maine, assignors to Marine Colloids, Inc., Springfield, N.J.

No Drawing. Continuation-in-part of application Ser. No. 848,700, Aug. 8, 1969. This application Feb. 9, 1971, Ser. No. 114,072
Int. Cl. C08b *19/02, 19/12*
U.S. Cl. 260—209.5 36 Claims

A carbohydrate gum is subjected to anhydrous sulfation with a sulfating agent in the form of a reaction product of sulfur trioxide with a Lewis base. The gum is produced in a water-containing, water-distended condition by coagulation from solution or by swelling in an aqueous medium and water and any liquid irreversibly reactive with the sulfating agent are replaced by a surrogate liquid that has a vapor pressure substantially lower than that of water and any other liquid carried by the particles that is irreversibly reactive with the sulfating agent, said surrogate liquid being miscible with the water and with said other liquid, by slurrying the particles with the surrogate liquid and evaporating the liquid medium until the water and any reactive liquid are removed but leaving surrogate liquid associated with the particles. The surrogate liquid is either the same as or is miscible with the solvent that is used for the sulfating agent. The process is one having general applicability to carbohydrate gums so as to impart improved receptivity to sulfation without excessive degradation. Degradation also is minimized by carrying out the sulfation in the presence of a base. Predetermined degrees of sulfation are made possible by temperature control and new sulfated gum products are afforded which may be produced so as to have properties having specific utilities for different commercial applications, the end products having especial advantages for use in milk products.

3,720,660

SYNTHETIC SMOKING MATERIAL

John Harold Arendt, Geneva, Jean Pierre Sachetto, Gaillard, and Jean-Paul Carriere, Geneva, Switzerland, assignors to Gallaher Limited, Belfast, Northern Ireland

Filed Aug. 30, 1971, Ser. No. 175,901
Claims priority, application Great Britain, Sept. 4, 1970, 42,553/70; May 11, 1971, 14,215/71
Int. Cl. A24d *1/18*; C08b *15/00, 19/00*
U.S. Cl. 260—212 8 Claims

The invention is concerned with a method of producing an oxidized polysaccharide for use in a synthetic smoking material, wherein the polysaccharide is treated in an oxidizing system containing at least stoichiometric quantities of nitrosonium ion for uronic oxidation.

3,720,661

PROCESS FOR PRODUCING ACETYLATED REGENERATED CELLULOSE ARTICLES

Alain Breton; Marc Tricot, and Andre Rajon, all of Paris, France, assignors to Societe Rhodiacetea and CTA Compagnie Industrielle de Textiles Artificiels & Synthetiques, Paris, France

Filed Jan. 5, 1971, Ser. No. 104,137
Int. Cl. C08b *3/06*; D06m *13/20*
U.S. Cl. 260—227 10 Claims

A process for producing acetylated regenerated cellulose articles and such articles per se, wherein the regenerated cellulose article is acetylated first in the liquid phase and thereafter in the gaseous phase, which comprises first acetylating the regenerated cellulose article to a combined acetic acid level of from 20 to 45 percent in a liquid bath at a temperature of 80° to 135°C, such bath containing acetic anhydride and free acetic acid, in the presence of a catalytic agent having a non-acid or slightly acid reaction, the weight ratio of the acetic anhydride to the acetic anhydride plus free acetic acid being between 0.5 and 0.9, and thereafter acetylating the regenerated cellulose article to a combined acetic acid level of from 45 to 62.5 percent with acetic anhydride in the vapor phase at a temperature of 120° to 180°C.

3,720,662

PREPARATION OF STARCH ESTERS

Martin M. Tessler, Edison, and Morton W. Rutenberg, Plainfield, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,129
Int. Cl. C08b *19/04*
U.S. Cl. 260—233.5 7 Claims

Aqueous slurries or dispersions of starch are reacted with mixed carbonic-carboxylic anhydrides of monocarboxylic acids under alkaline conditions to yield ester derivatives of starch. These starch products can also be prepared by a dry reaction process.

3,720,663

PREPARATION OF STARCH ESTERS

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

Filed June 24, 1971, Ser. No. 156,524
Int. Cl. C08b *19/02*
U.S. Cl. 260—233.5 9 Claims

Aqueous slurries or dispersions of starch are reacted with imadazolides of carboxylic or sulfonic acids to yield starch ester derivatives. These starch products can also be prepared in non-aqueous solvents or by a dry reaction process.

3,720,664

α-UREIDOCYCLOHEXADIENYLALKYLENE-PENICILLINS

Raymond Curry Erickson, Metuchen, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,478

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 6 Claims

This invention relates to α-ureidocyclohexadienylalkylene-penicillins as well as their salts and compositions containing them, which are useful as antibacterial agents.

3,720,665

ACYLOXYMETHYL ESTERS OF ALPHA-PREIDO-CYCLO-HEXADIENYLALKYLENE-PENICILLINS

Arnold D. Welch, Princeton, Joseph Edward Dolfini, North Brunswick, and Frederick F. Giarrusso, Belle Mead, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,169

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 6 Claims

This invention relates to new acyloxymethyl esters of α-ureidocyclohexadienylalkylene-penicillins and compositions containing them which are useful as antibacterial agents.

3,720,666

6-(SUBSTITUTED-4-OXOURETIDINO-1-YL) PENICILLANIC ACIDS

John H. Sellstedt, King of Prussia, Daniel M. Teller, Devon, and Charles J. Guinosso, Abington, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Sept. 2, 1971, Ser. No. 177,485

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 3 Claims

Novel 6 - (2 - substituted-4-oxo-phenyluretidino-1-yl) penicillanic acids are described which are useful as antibacterial agents.

3,720,667

20-PYRROLECARBOXYLIC ACID ESTER OF 20-HYDROXY-Δ -PREGNENE DERIVATIVES

Hansuli Wehrli, Schaffhausen, and Oskar Jeger, Zollikerberg, Zurich, both of Switzerland, assignors to Ciba-Gergy Corporation, Ardsley, N.Y.

Filed June 11, 1970, Ser. No. 45,588

Claims priority, application Switzerland, June 13, 1969, 9122/69

Int. Cl. C07c *173/10*

U.S. Cl. 260—239.55 R 3 Claims

Compounds of the class of 20-pyrrolecarboxylic acid esters of 20-hydroxy-Δ^{16}-pregnenes have cardiotonic activity; they are active ingredients of pharmaceutical compositions and have useful cardiotonic activity; a typical example is the 20-(2,4-dimethyl-pyrrole-3-carboxylic acid ester) of 3α,9α-epoxy-14β,18-(epoxyethano-N-methylimino)-5β-pregna-7,16-diene-3β,11α,20α-triol.

3,720,668

NITROFURYL-OXADIAZOLE AMIDES

Hermann Breuer, Burgweinting, Germany, assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,328

Int. Cl. C07d *85/52*

U.S. Cl. 260—240 A 11 Claims

Amide derivatives of 3-(5-nitro-2-furyl)-1,2,4-oxadiazole-5-carboxylic acid are useful as antimicrobial agents.

3,720,669

7-[(3,5,7 - TRIAZA-1-AZONIA - 1 - ADAMANTYL)-ACETAMIDO] - CEPHALOSPORANIC ACID HALIDES AND SULFONATES

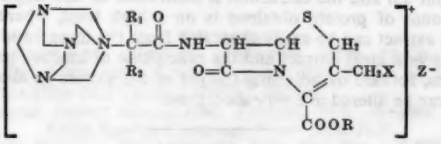
Hermann Breuer, Burgweinting, Germany, assignor to E. R. Squibb & Sons, Princeton, N.J.

No Drawing. Filed June 28, 1971, Ser. No. 157,690

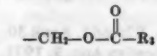
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 6 Claims

New 7 - [(3,5,7 - triaza-1-azonia-1-adamantyl)acetamido]-cephalosporanic acid halides and sulfonates of the following general formula



wherein R is hydrogen, lower alkyl, aralkyl or the group



R_1 is hydrogen, lower alkyl, cyclo-lower alkyl, unsaturated cyclo-lower alkyl, aryl, aralkyl, adamantyl, cycloheptatrienyl or a heterocyclic group; R_2 is hydrogen or lower alkyl; R_3 is lower alkyl, aryl or aralkyl; X is hydrogen, hydroxy, lower alkanoyloxy, aroyloxy or aralkanoyloxy or together X and R represent a bond linking carbon and oxygen in a lactone ring and Z is a halogen or sulfonate group; are useful as antibacterial agents.

3,720,670

BENZODIOXANE DERIVATIVES

Michio Nakanishi, Oita, Katsuo Arimura, Fukuoka, and Yoshiaki Tsuda, Oita, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

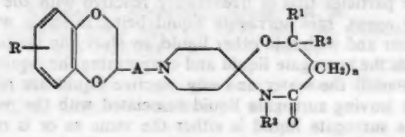
No Drawing. Filed Mar. 1, 1971, Ser. No. 119,916

Claims priority, application Japan, Feb. 27, 1970, 45/17,513; Dec. 24, 1970, 45/126,832, 45/126,833, 45/126,834

Int. Cl. C07d *87/08*

U.S. Cl. 260—244 R 9 Claims

Benzodioxane derivatives of the formula:



(I)

wherein R is a member selected from the group consisting of H, halogen, a lower alkyl group of 1 to 4 carbon atoms and a lower alkoxy group of 1 to 4 carbon atoms, each of R^1 and R^2 is a member selected from the group consisting of H, a lower alkyl group of 1 to 4 carbon atoms and phenyl, R^3 is a member selected from the group consisting of H and a lower alkyl group of 1 to 4 carbon atoms, A is a lower alkylene group of from 1 to 4 carbon atoms, and *n* is 0 or 1; and the pharmaceutically acceptable acid addition salts thereof.

3,720,671

POLYCYCLIC DYESTUFFS

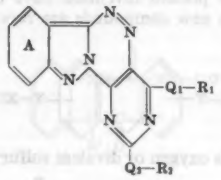
Gunther Kaupp, Binningen, and Jacques Voltz, Riehen Basel-Land, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 849,191, Aug. 11, 1969, abandoned. This application Oct. 5, 1970, Ser. No. 78,288

Int. Cl. C07d *57/34*

U.S. Cl. 260—249.5 8 Claims

Polycyclic dyestuffs are disclosed which are of the formula



wherein any substituent of A is selected from hydrogen, nitro, halogen, lower alkyl, lower alkoxy and SO_3M^+, Q_1 and $_2$ denote preferably each a —NZ-bridge wherein Z is hydrogen or lower alkyl and R_1 and R_2 denotes, independently of each other hydrogen or an optionally substituted hydrocarbon radical, preferably a lower alkyl radical.

These dyestuffs when free from water-solubilizing groups, such as SO_3M^+, are useful as dispersion dyestuffs for the dyeing or printing of hydrophobic, synthetic organic fiber material, such as cellulose 2½ or -tri-acetate especially however for the dyeing or printing of textile material made from polymeric esters of aromatic polycarboxylic acids with polyvalent alcohols. Dyestuffs which contain groups dissociating acid in water are useful for dyeing or printing of polyamide fibers.

The greenish-yellow, yellow and reddish-yellow dyeings are distinguished of high brilliancy and fluorescence as well as very good fastness to light and sublimation.

3,720,672

PREPARATION OF 2-METHOXY-3-ISOBUTYLPYRAZINE

Ron G. Buttery, Richmond, Richard M. Seifert, El Cerrito, Robert E. Lundin, Berkeley, and Dante G. Guadagni, Moraga, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Apr. 18, 1969, Ser. No. 818,471, now Patent No. 3,630,750. Divided and this application Jan. 7, 1971, Ser. No. 104,778

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 R 3 Claims

Leucine amide is reacted with glyoxal to produce 2-hydroxy-3-isobutylpyrazine, and this intermediate is methylated to yield the new compound 2-methoxy-3-isobutylpyrazine. This compound exhibits an intense aroma of freshly-chopped green bell peppers, and is useful for flavoring food products.

3,720,673

PROCESS FOR THE MANUFACTURE OF QUINOXALINE 1,4-DIOXIDES

Raymond Alexander Bowie, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 24, 1971, Ser. No. 146,528

Claims priority, application Great Britain, June 18, 1970, 29,626/70

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 R 10 Claims

A process for the manufacture of growth promoting quinoxaline-1,4-dioxide derivatives which comprises oxidising a quinoxaline derivative with hydrogen peroxide in the presence of a tungsten compound.

3,720,674

4-AMINO-1H-PYRAZOLO[3,4-d]PYRIMIDINE DERIVATIVES

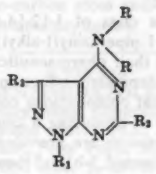
Hermann Breuer, Burgweinting, and Ernst Schulze and Uwe D. Treuner, Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Sept. 2, 1970, Ser. No. 69,172

Int. Cl. C07d *51/46*

U.S. Cl. 260—256.4 F 3 Claims

New pyrozolo[3,4-d]pyrimidine derivatives which have the formula



wherein each R is hydrogen, lower alkyl, phenyl, substituted phenyl, hydroxy-lower alkyl or di-lower alkylamino-lower alkylene or together with the nitrogen form a monocyclic nitrogen heterocyclic radical, R_1 is lower alkyl, cycloalkyl, phenyl or substituted phenyl, R_2 is cycloalkyl, phenyl or substituted phenyl and R_3 is hydrogen, lower alkyl, cycloalkyl, phenyl or substituted phenyl, and salts thereof, are useful as hypoglycemic agents and anti-inflammatory agents.

3,720,675

PYRAZOLO[3,4-b]PYRIDINE-5-CARBOXAMIDES

Hans Hoehn, Tegernheim, Germany, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,674

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 C 5 Claims

New 5-carboxamides of pyrazolo[3,4-b]pyridines and salts thereof are useful as ataractic, analgesic and anti-inflammatory agents.

3,720,676

[4-(10,11-DIHYDRO-5H-DIBENZO[A,D]CYCLOHEPTEN-10-YL-1-PIPERAZINYL]-ALKYL]-3-ALKYL-2-IMIDAZOLIDINONES AS CNS DEPRESSANTS

Walter Schindler, Riehen/Baseland, and Armin Zuest, Birsfelden/Baseland, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,435

Claims priority, application Switzerland, Aug. 11, 1969, 12120/69

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR 3 Claims

Compounds of the class of 1-[2- and 3-[4-(10,11-dihydro-5H-dibenzo[a,d]cyclohepten-10-yl)-1-piperazinyl]-alkyl]-3-alkyl-2-imidazolidinone which can be substituted in 8-position by chloro, methyl or methoxy, and the pharmaceutically acceptable acid addition salts thereof, have a depressant effect on the central nervous system; pharmaceutical compositions comprising these compounds and a method of producing a depressant effect on the central nervous system of warm-

blooded animals, are provided; an illustrative embodiment is 1-[2-[4-(8-methyl-10,11-dihydro-5H-dibenzo[a,d]cyclohepten-10-yl)-1-piperazinyl]-ethyl]-3-methyl-2-imidazolidinone-bis-maleate.

3,720,677

4-(THIENO[2,3-B][1,5]BENZOTHIAZEPIN-4-YL)-PIPERAZINYL-ALKYL-3-ALKYL-2-IMIDAZOLIDINONES AS CNS-DEPRESSANTS

Walter Schindler, Riehen/Basel-land; Erich Schmid, Basel, and Armin Zuest, Birsfelden/Basel-land, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,511

Claims priority, application Switzerland, Aug. 11, 1969, 12125/69

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR 2 Claims

Compounds of the class of 1-[2-[4-(thienol[2,3-b][1,5] benzothiazepin-4-yl]-1-piperazinyl]-alkyl]-3-alkyl-2-imidazolidinones and their pharmaceutically acceptable acid addition salts have a depressant effect on the central nervous system; pharmaceutical compositions comprising such compounds and methods of producing a central nervous system depressant effect therewith are provided; a typical embodiment is 1-[2-[4-(thieno[2,3-b][1,5]benzothiazepin-4-yl)-1-piperazinyl]-ethyl]-3-methyl-2-imidazolidinone.

3,720,678

PROCESS FOR THE MANUFACTURE OF FLAVANTHRONES

Maurice Greiat, Bettingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 21, 1971, Ser. No. 108,602

Claims priority, application Switzerland, Feb. 11, 1970, 1989/70

Int. Cl. C07d *39/00*

U.S. Cl. 260—273 10 Claims

A process for the manufacture of flavanthrones, wherein a 1-halogeno-2-aminoanthraquinone is heated with copper powder in a strongly polar aprotic organic solvent.

3,720,679

2-METHYLENE GLUTARIMIDE AND PROCESS FOR PREPARING THE SAME

Julian Feldman, Cincinnati, Ohio, and Martin Thomas, Charlton City, Mass., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 484,448, Sept. 1, 1965, abandoned, and Ser. No. 679,193, Oct. 30, 1967, abandoned, and Ser. No. 830,544, June 4, 1969, abandoned. This application Jan. 18, 1971, Ser. No. 107,527

Int. Cl. C07d *29/20*

U.S. Cl. 260—281 2 Claims

A process is provided for the preparation of alpha-substituted unsaturated aliphatic diamides and alpha-substituted unsaturated aliphatic imides from the corresponding dinitriles, employing an amount of water within the range from about 50 mole percent to about 200 mole percent of that stoiciometrically required to hydrolyze the dinitrile to the diamide, and wherein the acid concentration is within the range of 40 percent to 82 percent, at a temperature within the range of about 0° to 150°C., in the presence of an inorganic or organic acid and in a homogeneous reaction medium. The hydrolysis is arrested, preferably by neutralization.

Diamides are obtained preferentially by neutralizing the mixture at temperatures below about 30° C. Cyclic imides are obtained preferentially by neutralizing the acid hydrolysis mixture at elevated temperatures above about 60° C. The products formed by neutralization at intermediate temperatures are mixtures of the two products.

3,720,680

BIS-BASIC ETHERS AND THIOETHERS OF DIBENZOTHIOPHENE

William L. Albrecht, Robert W. Fleming, and Stephen W. Horgan, Cincinnati, Ohio, assignors to Richardson-Merrell, Inc., New York, N.Y.

No Drawing. Original application Feb. 18, 1970, Ser. No. 12,428, now Patent No. 3,673,191. Divided and this application Apr. 28, 1972, Ser. No. 248,555

Int. Cl. C07d *63/24*

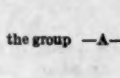
U.S. Cl. 260—293.57 4 Claims

The novel bis-basic ethers and thioethers of dibenzothiophene of the present invention have useful antiviral properties. These new compounds are represented by the formula

Formula I

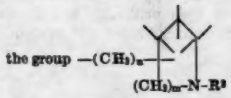
wherein each Y is oxygen or divalent sulfur; and each X is

(A)



wherein each A is a straight or branched alkylene chain having from 2 to 8 carbon atoms and which separates the amino nitrogen and Y by at least 2 carbon atoms; R and R^1 are individually hydrogen, (lower)alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms and having the vinyl unsaturation in other than the 1-position of the alkenyl group; or each set of R and R^1 taken together with the nitrogen atom to which they are attached is a saturated monocyclic heterocyclic group such as pyrrolidino, piperidino, morpholino, or N-(lower)alkylpiperazino; or

(B)



wherein *n* is a whole integer of from 0 to 2, *m* is 1 or 2, and R^2 is hydrogen, (lower)alkyl having from 1 to 6 carbon atoms, or alkenyl of from 3 to 6 carbon atoms and having the vinyl unsaturation in other than the 1-position of the alkenyl group.

This invention also includes pharmaceutically acceptable acid addition salts of the bases represented by Formula I. These new compounds may be prepared by several different methods which are described.

3,720,681

2-AMINO-5-SPIRO SUBSTITUTED OXAZOLIN-4-ONE COMPOUNDS

Michael Raymond Harnden, Horsham, England, assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 27,120, Apr. 9, 1970, which is a continuation-in-part of application Ser. No. 689,356, Dec. 11, 1967, both now abandoned. This application Aug. 10, 1971, Ser. No. 170,652

Int. Cl. C07d *85/40*

U.S. Cl. 260—293.66 4 Claims

A novel series of 2-amino-5-spiro substituted oxazolin-4-ones and intermediates for making said compounds. These compounds are prepared by first converting the appropriately substituted cycloketone to the corresponding cyclocyanohydrin; converting this compound to the corresponding hydroxy acid; esterifying the hydroxy acid, and finally cyclizing the hydroester to form the 2-amino-5-sprio substituted oxazolin-4-one. These compounds exhibit central nervous system activity and are active as either stimulants or depressants, and some are useful as performance enhancers.

3,720,682

SUBSTITUTED AMIDOPHENYLTHIOUREAS

Arno Widdig; Engelbert Kuhle; Klaus Sasse; Hans Scheinpflug; Ferdinand Grewe; Helmut Kaspers, and Paul-Ernst Frohberger, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

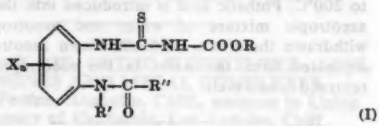
Filed Nov. 6, 1970, Ser. No. 87,590

Claims priority, application Germany, Nov. 29, 1969, P 19 60 027.2

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 H 5 Claims

Amidophenylthioureas of the formula:



(I)

in which

each X independently stands for a halogen atom, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms,

n stands for 0, 1 or 2,

R stands for alkyl with one to 12 carbon atoms,

R′ stands for a hydrogen atom or alkyl with one to four carbon atoms, and

R″ stands for a five- or six-membered heterocyclic radical which may contain one or more hetero-atoms selected from oxygen, sulfur and nitrogen atoms, which possess fungicidal properties and which may be produced by conventional methods.

3,720,683

2-PHENYL-3-ACYLBENZOTHIAZOLINES AND THEIR OXIDES

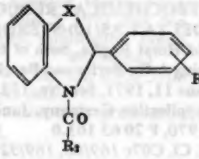
Hermann Breuer, Burweinting, and Ernst Schulze, Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Sept. 2, 1970, Ser. No. 69,170

Int. Cl. C07d *91/16*

U.S. Cl. 260—304 11 Claims

2-phenyl-3-acylbenzothiazolines and their 1-oxides of the general formula



are useful as anti-inflammatory and anti-microbial agents.

3,720,684

5-HALO-1,2,4-THIADIAZOLES

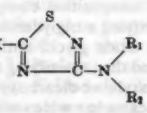
John Krenzer, and Sidney B. Richter, both of Chicago, Ill., assignors to Velsical Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 678,531, Oct. 27, 1967, abandoned. This application Oct. 13, 1970, Ser. No. 80,487

Int. Cl. C07d *91/60*

U.S. Cl. 260—306.8 D 12 Claims

A compound of the formula



wherein X is halogen, R_1 and R_2 are each selected from the group consisting of hydrogen, an aliphatic radical, a cycloaliphatic radical, aralkyl, aryl, acyl and trihalomethylmercapto provided that only one of R_1 and R_2 is hydrogen and forms a hydrocarbon heterocyclic ring with the nitrogen atom to which they are attached. These compounds are useful as fungicides, miticides, nematocides and insecticides.

3,720,685

3-AMINO-5-BENZYL-1,2,4-OXADIAZOLES

Hermann Breuer, Burgweinting, and Ernst Schulze, Regensburg, both of Germany, assignors to E.R. Squibb & Sons, Inc., New York, N.Y.

Filed July 15, 1970, Ser. No. 55,253

Int. Cl. C07d *85/52*

U.S. Cl. 260—307 G 11 Claims

3-Amino-5-benzyl-1,2,4-oxadiazole and related compounds substituted on the α-carbon atom and/or on the phenyl ring are useful as antiinflammatory agents.

3,720,686

MERCAPTOBENZIMIDAZOLE DERIVATIVES

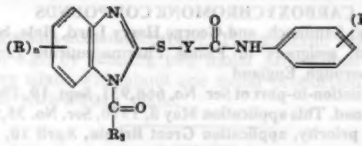
Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Highland Park, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,452

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 6 Claims

Mercaptobenzimidazole derivatives are provided having the structure



and which are useful as anthelmintic agents.

3,720,687

FURAN AND THIOPHENE SUBSTITUTED VINYL PHOSPHATES

Peter Kirby, Bearsted, England, and Duane K. Hass, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 19, 1969, Ser. No. 859,562

Int. Cl. A61k *27/00*; C07d *5/18, 63/14*

U.S. Cl. 260—332.5 9 Claims

Novel heterocyclic substituted aliphatic esters of beta-chloro-substituted vinyl phosphates are useful in the control of internal helminth parasites of warm-blooded animals.

3,720,688

CHEMICAL COMPOUNDS AND METHODS OF PREPARING THE SAME

Marcia E. Christy, Perkasie, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Jan. 29, 1968, Ser. No. 723,964, now Patent No. 3,576,823. Divided and this application June 22, 1970, Ser. No. 48,475

Int. Cl. C07d *21/00*

U.S. Cl. 260—340.5 11 Claims

The disclosure describes derivatives of dibenzocycloheptenes useful because of their antidepressant activity. The disclosure also describes a method for preparing these compounds from the known 3α,12β-dihydro-2,2-dimethyl - 5H - dibenzo[3,4:6,7]cyclohepta[1,2-d] - 1,3 - dioxol-8-one and derivatives thereof which contain additional substituents substituted in any position of the benzenoid ring. This starting material, alternatively known as the acetonide of 10,11-dihydroxy-10,11-dihydro-5H-dibenzo-[a,d]-cycloheptene-5-one is converted by treatment with a 3-dialkylaminopropyl magnesium halide to produce the corresponding 5-hydroxy - 5 - (3-dialkylaminopropyl)

compound which is then dehydrated under acidic conditions to produce the acetonide of 10,11-dihydroxy-10,11-dihydro-5-(3 - dialkylaminopropylidene)-5H-dibenzo[a,d] cycloheptene. This product is hydrolyzed to produce the corresponding 10,11-dihydroxy - 5 - (3-alkylaminopropylidene)-5H-dibenzo[a,d]cycloheptene.

3,720,689

PROCESS FOR STABILIZING LACTONES

Gerhard Pohl, Grossauheim; Karl-Heinz Rink, Hanau (Main); Wolfgang Treibel, Grossheim; Otto Welberg, Neu-Isenburg, and Wolfgang Weigert, Offenbach (Main), all of Germany, assignors to Deutsch Gold-und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Filed Nov. 12, 1970, Ser. No. 89,003

Claims priority, application Germany, Nov. 12, 1969, P 19 56 832.2

Int. Cl. C07d *9/00*

U.S. Cl. 260—343 **8 Claims**

Lactones are stabilized, particularly against discoloration, by mixing the lactone with oxygen, an oxidizing agent or an acid which is less volatile than the lactone and subjecting the mixture to distillation.

3,720,690

PHARMACEUTICALLY ACTIVE BIS-CARBOXYCHROMONE COMPOUNDS

John King, Sandbach, and George Harry Lord, Hale, both of England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England

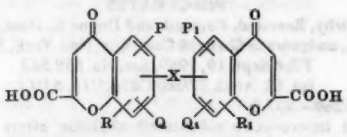
Continuation-in-part of Ser. No. 668,931, Sept. 19, 1967, abandoned. This application May 8, 1970, Ser. No. 35,925

Claims priority, application Great Britain, April 10, 1970, 17,082/70

Int. Cl. C07d *7/34*

U.S. Cl. 260—345.2 **16 Claims**

Novel compounds of the formula



the substituents P, Q, R, P_1, Q_1 and R_1 being defined in the specification, useful for inhibiting the effects of antibody-antigen reaction, are provided, as well as a method for the preparation thereof and pharmaceutical compositions containing these compounds.

3,720,691

2-(3,8-DIOXATRICYCLO[5.1.0.$0^{2,4}$]OCT-5-EN-5-YL)-4H-PYRAN-4-ONE

Ferdinand Barbatschi, Montvale, N.J.; Donald Bruce Borders, Suffern, and Anthony Joseph Shay, Pearl River, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 21, 9171, Ser. No. 145,968

Int. Cl. C07d *7/18*

U.S. Cl. 260—345.9 **1 Claim**

This disclosure describes 2-(3,8-dioxatricyclo-[5.1.0.$0^{2,4}$]oct-5-en-5-yl)-4H-pyran-4-one, a new compound which exhibits antimicrobial activity. This new compound is formed during the cultivation under controlled aerobic conditions of an undetermined filamentous fungal species NRRL 3938.

3,720,692

PRODUCTION OF PHTHALIC ANHYDRIDE FROM PHTHALIC ACID

Ferdinand List, and Helmut Alfs, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Dec. 2, 1969, Ser. No. 881,598

Claims priority, application Germany, Dec. 7, 1969, P 18 13 391.0

Int. Cl. C07c *63/18*

U.S. Cl. 260—346.7 **8 Claims**

Melt of phthalic anhydride containing a small amount of azeotroping agent is maintained at a temperature of from 160° to 200°C. Phthalic acid is introduced into the melt, and an azeotropic mixture of water and azeotroping agent is withdrawn therefrom. The withdrawn azeotroping agent is separated from the water in the azeotropic mixture and returned to said melt.

3,720,693

ANTHRAQUINONE DYESTUFFS

Karl-Heinz Peters, and Rutger Neeff, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

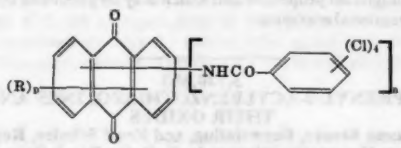
Filed Feb. 6, 1970, Ser. No. 9,401

Claims priority, application Germany, Feb. 15, 1969, P 19 07 783.9

Int. Cl. C09b *1/42, 1/50*

U.S. Cl. 260—377 **5 Claims**

Anthraquinone dyestuffs of the formula



in which R is a substituent; *p* is a number 0–6; and *n* is 1 or 2; their production and use as pigments are disclosed.

3,720,694

PARTIAL ELECTROCHEMICAL REDUCTION OF 19-NOR-DELTA 1,3,5(10)-STEROIDS

Klaus Junghans, and Horst Ropke, both of Berlin, Germany, assignors to Schering A.G., Berlin and Bergkamen, Germany

Filed June 11, 1971, Ser. No. 152,454

Claims priority, application Germany, June 11, 1970, P 20 29 415.9; Dec. 12, 1970, P 20 63 101.0

Int. Cl. C07c *169/08, 169/32*

U.S. Cl. 260—397.5 **17 Claims**

A-ring aromatic steroids containing an electrolytically reducible group are selectively reduced with the aromatic A-ring intact employing ammonia or an amine as the reaction solvent.

3,720,695

WATER SOLUBLE LUBRICANT

Inara Dagnija Meisters, Homewood, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 834,556, June 18, 1969, Pat. No. 3,634,245. This application June 17, 1971, Ser. No. 154,152

Int. Cl. C11c *3/10, 3/00;* **C10m** *1/26*

U.S. Cl. 260—404.8 **4 Claims**

A water soluble composition comprising the product obtained by transesterifying a triglyceride (e.g. castor oil) with a polymeric alkylene oxide glycol until the reaction products are water-soluble and then esterifying the hydroxy compounds present with a carboxylic or dicarboxylic acid. These products are of value as lubricants in a wide variety of fields.

3,720,696
PROCESS FOR THE EXTRACTION OF 9-HEXADECENOIC ACID
Kiyoshi Osawa, Tokyo, Japan, assignor to Mimatu Kako Kabushiki Kaisha, Kanagawa-ken, Japan
Filed Aug. 6, 1970, Ser. No. 61,565
Int. Cl. C09f 5/00; C11c 1/08
U.S. Cl. 260—419 13 Claims

The invention relates to a novel process for the isolation of 9-hexadecenoic acid from a fatty acid mixture containing the same. The improvement of the process resides in the use of a specific amount of urea (0.5–5 times) relative to the treating mixture, as a negative extraction agent for carrying out the desired isolation.

3,720,697
PREPARATION OF ORTHO-SUBSTITUTED ARYL PHOSPHINES AND METAL COMPLEXES
Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Filed Mar. 1, 1971, Ser. No. 119,836
Int. Cl. C07f 15/00
U.S. Cl. 260—429 R 11 Claims

A method is described for the preparation of monocyclic aryl compounds of trivalent Group V–A elements wherein the aryl substituent is substituted in its ortho position with a halogen, alkyl, aryloxy or alkyloxy substituent. The resultant compound is useful as a ligand in the preparation of metal complexes, such as complexes of palladium and platinum, which are catalysts for hydrocarbon conversions such as oxidations or hydroformylations. The method for the ortho substitution of the aromatic compounds comprises the reaction of a palladium or platinum chelate of the aromatic compound with substituting agents such as halogen or halide for the halogen-substituted, an alkyl halide for the alkyl-substituted, or an alkyl or aryl orthoformate ester for the alkoxy or aryloxy-substituted compound. Suitable chelates for reaction in this method of synthesis are disclosed in my application, Ser. No. 873,641, filed Nov. 3, 1969, now Pat. No. 3,622,607.

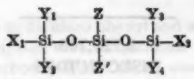
3,720,698
PROCESS FOR PRODUCING TRIALKOXY-ALUMINUM
Eiichi Ichiki, Kazuo Iida, Michio Kozai, and Yoshihiro Kondo, Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed June 7, 1971, Ser. No. 150,565
Claims priority, application Japan, June 10, 1970, 45/50,663
Int. Cl. C07f 5/06
U.S. Cl. 260—448 AD 13 Claims

A trialkoxyaluminum is produced from an alkylaluminum compound,

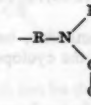
wherein R_1 represents an alkyl group having 2–30 carbon atoms and R_2 and R_3 represent alkyl groups or alkoxy groups having 2–30 carbon atoms through oxidation by introducing the alkylaluminum compound diluted with at least 600 g. of a solvent having a boiling point of −50°–150° C. and being substantially inert to the alkylaluminum compound, per gram equivalent of alkyl groups of the alkylaluminum compound, into a molecular oxygen-containing gas under a partial pressure of oxygen of at least 0.1 kg./cm.² absolute at a temperature of −20°–150° C., preferably 0°–100° C. under a pressure of not more than 50 kg./cm.² absolute, preferably 0.5–40 kg./cm.² absolute in a finely divided droplet state thereby to oxidize the alkylaluminum compound.

3,720,699
ACYLOXY ENDBLOCKED 3-γ - ACYLAMIDOPROPYL OR 3-γ-HALOACYLAMIDOPROPYL TRISILOXANES AND PROCESS
Darrel D. Stoddard, Santa Monica, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.
No Drawing. Filed Nov. 19, 1969, Ser. No. 878,187
Int. Cl. C07f 7/10, 7/18
U.S. Cl. 260—448.8 R 10 Claims

Protective cross-linked polysiloxane coatings for normally vulnerable substrates are prepared by curing linear polysiloxane polymers comprised of the hydrolysis-condensation reaction product of a siloxane having the formula



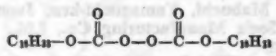
wherein X_1 and X_2 are acyloxy and Y_{1-4}, Z and Z' are independently selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, phenyl, C_7–C_{10} alkylphenyloxy, phenyloxy and



e.g., gamma-acetamidopropyl. The siloxane can be prepared, e.g., by reacting two molar proportions of a diacyloxy silane with about one molar proportion of a di-, tri-, or tetra-alkoxy silane.

3,720,700
DI-CETYL PEROXY DICARBONATE
Hakan Norback, Danderyd, Sweden, assignor to Kema Nord AB, Stockholm, Sweden
Filed Nov. 14, 1969, Ser. No. 876,802
Int. Cl. C07c 73/10; C09f 1/60
U.S. Cl. 260—463 1 Claim

The chemical compound di-cetyl peroxydicarbonate having the structural formula



as well as its method of production and its use as an initiator in the polymerization of unsaturated compounds such as vinyl chloride or other ethylenically unsaturated monomers.

3,720,701
9,10-BRIDGED ANTHRACENE COMPOUNDS
Bruce H. Klanderman, and Jan W. H. Faber, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 811,655, March 28, 1969, Pat. No. 3,577,366, which is a division of Ser. No. 616,789, Feb. 17, 1967, Pat. No. 3,457,235, which is a continuation-in-part of Ser. No. 530,381, Feb. 28, 1966, abandoned. This application Nov. 30, 1970, Ser. No. 93,815
Int. Cl. C07c 63/46, 69/16, 69/76
U.S. Cl. 260—475 FR 11 Claims

New 9,10-bridged anthracene compounds, such as 9,10-bis(carbethoxy)triptycene improve certain properties of polyesters prepared by polymerization or dicarboxylic acid, such as terephthalic acid, and an alkylene glycol, such as ethylene glycol, when incorporated in the polymerization mixture.

3,720,702

PARTIAL REDUCTION OF PHTHALONITRILES

John Archibald Nelson, Morris Plains, and Gledre Maria Zaunius, Springfield, both of N.J., assignors to Ciba Corporation, Summit, N.J.

Filed Dec. 29, 1969, Ser. No. 888,825
Int. Cl. C07c 121/78
U.S. Cl. 260—465 D 9 Claims

Dinitriles of organic acids, containing both cyano groups attached to vicinal carbon atoms, can be reduced without undue ring-formation and loss of nitrogen, by hydrogenating them in a liquid carboxylic acid anhydride, first over a palladium and then over a platinum catalyst, to yield the correspondingly acylated bis-aminomethyl compounds.

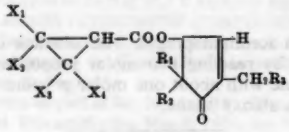
3,720,703

INSECTICIDES

Michael Elliott, Harpenden, and Norman F. Janes, Luton, both of England, assignors to National Research Development Corporation, London, England

Filed July 2, 1970, Ser. No. 52,084
Claims priority, application Great Britain, July 10, 1969, 34,787/69
Int. Cl. C07c 69/74, 69/76
U.S. Cl. 260—468 H 7 Claims

Synthetic pyrethroid insecticides, having no methyl substituent in the 3 position on the cyclopentenone ring, and of formula



where X_1 is halogen, alkyl, alkenyl or aryl, X_2, X_3 and X_4 are hydrogen, halogen or alkyl, R_1 and R_2 and hydrogen or alkyl and R_3 is a group having carbon-carbon unsaturation α to the CH_2 group to which R_3 is bonded, e.g., R_3 = phenyl, are prepared by esterification.

3,720,704

PROCESS FOR PREPARING 1,4-DIACETOXY-2-BUTENE FROM DICHLOROBUTENES

Toshio Sakomura, Hisashi Kisaki, Takashi Tada, and Shunsuke Mabuchi, Yamaguchi-ken, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi-ken, Japan

No Drawing. Filed June 16, 1969, Ser. No. 833,703
Claims priority, application Japan, June 21, 1968, 43/43,125
Int. Cl. C07c 67/02
U.S. Cl. 260—491 8 Claims

In a process for preparing acetic acid esters by reacting 3,4-dichloro-1-butene or a mixture of 3,4-dichloro-1-butene and 1,4-dichloro-2-butene with an alkali metal acetate, a process for preparing 1,4-diacetoxy-2-butene selectively characterized by adding at least one elemental metal selected from a group consisting of copper, iron and zinc or a compound thereof.

3,720,705

PROCESS FOR THE MANUFACTURE OF β-ACETOXYPIVALIC ALDEHYDE

Hans-Jurgen Arpe, Fischbach/Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt Am Main, Germany

Filed Aug. 6, 1970, Ser. No. 61,854
Claims priority, application Germany, Aug. 13, 1969, P 19 41 184.8
Int. Cl. C07c 67/00
U.S. Cl. 260—494 3 Claims

Process for the manufacture of β-acetoxypivalic aldehyde by the dosed addition of β-hydroxypivalic aldehyde and/or its dimer in an acetic acid solution to a boiling mixture of acetic acid, an entrainer and an acid catalyst at a rate which corresponds to the speed of formation of reaction water.

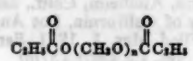
3,720,706

METHYLENE AND OXYMETHYLENE BIS-ESTER PRODUCTION

Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Jan. 27, 1972, Ser. No. 221,415
Int. Cl. C07c 67/04
U.S. Cl. 260—494 12 Claims

Methylene and oxymethylene di- or bis-esters, e.g.,



wherein n is 1 to 5, are produced by the reaction of a carboxylic acid, an olefin, carbon monoxide and formaldehyde in the presence of a rhodium catalyst and an iodide promoter. In a preferred modification of the process, methylene and oxymethylene bis-alkanoates are produced directly from an alkene, carbon monoxide, water and formaldehyde in the presence of the rhodium catalyst and the iodide promoter.

3,720,707

PROCESS FOR REDUCING THE SULFURIC ACID CONTENT OF ALKYLARYLSULFONIC ACIDS

Andre Jacques Emile Vanderlinden, and Pierre Marie Joseph Chislain de Radzitzky D'Ostrowick, both of Brussels, Belgium, assignors to Labofina Soc. AN., Bruxelles, Belgium

Filed Feb. 27, 1970, Ser. No. 15,200
Int. Cl. C07c 143/24
U.S. Cl. 260—505 P 12 Claims

The sulfuric acid content of alkylarylsulfonic acids obtained by sulfonation with sulfuric acid is reduced by treating said sulfonic acids with ammonia or an ammonium salt in quantity to form crystalline ammonium acid sulfate which is easily separated such as by filtration.

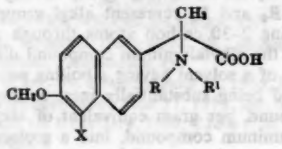
3,720,708

2-AMINO-2-(6-METHOXY-2-NAPHTHYL)-PROPIONIC ACID AND DERIVATIVES THEREOF

Otto Halpern, Palo Alto, Calif.

Division of Ser. No. 77,733, Oct. 2, 1970, abandoned. This application Oct. 1, 1971, Ser. No. 185,912
Int. Cl. C07c 101/04, 101/12
U.S. Cl. 260—519 3 Claims

2-(6-Methoxy-2-naphthyl)propionic acid is prepared by treating a compound represented by the formula:



wherein X is hydrogen, bromo or chloro and each of R and R^1 is hydrogen and methyl, with palladium-on-charcoal, platinum oxide in an inert ogranic solvent under hydrogen or with Raney nickel in an inert organic solvent until 2-(6-methoxy-2-

naphthyl)propionic acid is formed. The product has anti-inflammatory, analgesic and anti-pyretic activities.

3,720,709

SULFONYLPHENOXYALKANOIC ACIDS

James M. Sprague, Gwynedd Valley, and Carl Ziegler, Glenside, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,641
Int. Cl. C07c *143/78*
U.S. Cl. 260—519 14 Claims

(Sulfonylphenoxy)alkanoic acids and (mono- or di-substituted sulfamoylphenoxy)alkanoic acids and the salts, esters and amide derivatives wherein the benzene ring may be substituted by halo, trihalomethyl, lower alkyl, nitro, carboxy or a hydrocarbylene moiety. The products are prepared by either of two methods, one of which consists in treating a (halosulfonylphenoxy)alkanoic acid with a primary or secondary amine and the second of which comprises treating a (thiophenoxy)alkanoic acid with a oxidizing agent. The products are useful as uricosuric agents in the treatment of gout and gouty arthritis.

3,720,710

CARBONYL COMPOUNDS FROM ALLENE AND ITS DERIVATIVES

Charles J. Norton, Berkeley, Calif., and Edward Hurley, Jr., Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Nov. 1, 1968, Ser. No. 772,866
Int. Cl. C07c *55/02*
U.S. Cl. 260—533 R 5 Claims

Organic carbonyl compounds containing at least five carbon atoms are prepared by reacting an organic carbonyl compound having at least one hydrogen alpha to the carbonyl group with an acyclic organic compound containing at least two adjacent carbon to carbon double bonds at a temperature of from −50° to 200° C for a period of from 0.1 to about 100 hours in the presence of a free radical initiator. A mixture of monomeric and polymeric carbonyl products are formed. Selectivity to any particular weight product is monitored by selection of the mole ratio of reactants. As a specific example, reaction of allene with excess acetic acid forms a product mixture comprising pimelic acid, allyl acetic acid and a resin acid of average gram molecular weight between about 200 and about 2,000. These synthetic resin acids may be used as substitutes for naturally occurring organic acids or may be used to control the molecular weight or cross linking in polyesters.

3,720,711

DERIVATIVES OF 6-OXO-1-CYCLOHEXENE-1-CARBOXAMIDE

Ivo L. Jirkovsky, Montreal, Quebec, Canada, assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 2, 1971, Ser. No. 195,037
Int. Cl. C07c *103/86*
U.S. Cl. 260—557 R 12 Claims

Carboxamides and thiocarboxamides characterized by having an aminoalkylamino, lower alkylaminoalkylamino, di(lower)alkylaminoalkylamino or hydroxyalkylamino radical attached to position 2 of a 6-oxo-1-cyclohexene-1-carboxamide or 6-oxothio-1-cyclohexene-1-carboxamide with optional alkyl groups at position 4 are disclosed. The nitrogen atom of the carboxamido or thiocarboxamido radical may be substituted with an alkyl, aryl or optionally substituted aryl. The compounds are useful antiinflammatory, analgetic, antibacterial and antifungal agents and methods for their preparation and use are disclosed.

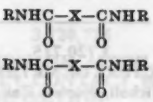
3,720,712

CYCLOALKANE-BISAMIDES

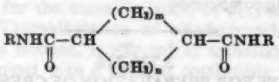
Theodore Largman, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed May 4, 1971, Ser. No. 140,278
Int. Cl. C07c *103/86*
U.S. Cl. 260—558 A 1 Claim

Compounds of the structure



wherein R is mono or dichloro phenyl and wherein X is ortho, meta or para phenylene or a difunctional alicyclic group of four to six ring carbons which can be unsubstituted or substituted with C_1 to C_3 alkyl groups, are chemosterilants for insects, birds, and mammals. When X is a difunctional alicyclic group, as above described, particularly preferred compounds of the instant invention have the structure



wherein *m* and *n*, which can be the same or different can range from 0 to 2 with the sum of *m* and *n* ranging from 2 to 4.

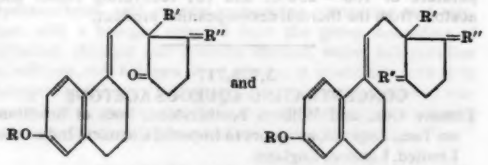
3,720,713

NOVEL PROCESS FOR PREPARATION OF OPTICALLY ACTIVE KETO STEROIDS

Robert Bucourt; Lucien Nedelec, both of Clichy-sous-Bois, and Jean-Claude Gasc, Bondy, all of France, assignors to Rouseel Uclaf, Paris, France

Division of Ser. No. 633,430, April 25, 1967, Pat. No. 3,472,885. This application March 21, 1969, Ser. No. 809,382
Int. Cl. C07c *103/19*
U.S. Cl. 260—559 H 3 Claims

Intermediates in the synthesis of steroids having the formulas



wherein R and R′ are alkyl of one to three carbon atoms and may be different and R″ is selected from the group consisting of a hydrazide, a semicarbazide, a semioxamazide, a lower alkanediol, a lower alkanedithiol and a lower alkoxycarbonyl hydrazine.

3,720,714

2-ALKOXY-2(NAPHTHYL)-ALKANAMIDOXIMES

Denis M. Bailey, Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 740,473, June 27, 1968, Pat. No. 3,607,941. This application Oct. 19, 1970, Ser. No. 82,148
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 G 3 Claims

A 2-(lower-alkoxy)-2-Ar alkanamidoxime, having hypoglycemic activity, where Ar is phenyl, naphthyl, indanyl, biphenylyl, cyclohexenyl, cyclohexyl or phenyl substituted by from one to three substituents selected from lower-alkyl, lower-alkoxy, halo, trihalomethyl, lower-alkylmercapto,

lower-alkylsulfonyl, di(lower-alkyl)amino, amino, hydroxy, nitro or benzyloxy, is prepared by reacting a 2-(lower-alkoxy)-2-Ar-alkanenitrile with hydroxylamine. The intermediate 2-(lower-alkoxy)-2-Ar-alkanenitrile is prepared preferably by first reacting Ar-CHO with a tri-(lower-alkyl) orthoformate to form the aldehyde di-(lower-alkyl) acetal, reacting the latter with an acyl halide to form the corresponding α-halo-Ar-methyl lower-alkyl ether and reacting said ether with an alkali cyanide to yield said intermediate nitrile.

3,720,715

MANUFACTURE OF METHYLAMINES

Edward McKillop Nicholl, Norton Hall, The Green, Norton, Stockton-on-Tees, England

Filed Oct. 12, 1970, Ser. No. 79,771

Claims priority, application Great Britain, Nov. 3, 1969, 53,695/69

Int. Cl. C07c *85/06*

U.S. Cl. 260—583 J 7 Claims

Methylamines are synthesized by ammonolysis of methanol at elevated temperature and pressure and in the presence of hydrogen which suppresses formation of undesirable corrosion-inducing compounds.

3,720,716

PROCESS FOR PREPARATION OF CRESOL AND ACETONE FROM CYMENE HYDROPEROXIDE

Yoshiyuki Shinohara, Otake, and Toshiyuki Isaka, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed June 12, 1970, Ser. No. 45,641

Int. Cl. C07c *49/08*

U.S. Cl. 260—593 A 8 Claims

An improvement for a process for the preparation of cresol and acetone from cymene hydroperoxide which comprises (a) subjecting a liquid oxidation product of cymene containing at least 50 percent by weight of cymene hydroperoxide to an acid-catalyzed cleavage at a temperature of 60°– 90°C. until the concentration of cymene hydroperoxide in the liquid is 0.5 – 5 percent by weight, (b) neutralizing the incompletely cleaved product with an alkali to stop the acid-catalyzed cleavage, (c) thermally decomposing the hydroperoxide remaining in the oil phase of the neutralized product at a temperature of 100°– 250°C. and (d) recovering cresol and acetone from the thermal decomposition product.

3,720,717

CONCENTRATING AQUEOUS ACETONE

Terence Cox, and William Featherstone, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 24, 1970, Ser. No. 75,799

Claims priority, application Great Britain, Sept. 30, 1969, 48,067/69

Int. Cl. C07c *49/08*

U.S. Cl. 260—593 P 5 Claims

Removal of water, possibly in already low concentration, from aqueous acetone by pervaporation techniques in which a water enriched phase permeates a selective membrane. In an alternative, a fluid is caused to sweep the permeate fraction off the far side of the membrane.

3,720,718

CONVERSION OF CHLOROFORMATES TO AN ALDEHYDE

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,309

Int. Cl. C07c *45/00*

U.S. Cl. 260—601 R 10 Claims

An aldehyde is prepared by contacting a chloroformate with a liquid reaction medium containing a Group VIII noble metal catalyst in complex association with a biphyllic ligand at a temperature between 75° C. and 400° C. and at a pressure sufficient to maintain liquid phase reaction conditions. The chloroformate decomposes to form the aldehyde, hydrogen chloride and carbon monoxide. A typical process comprises contacting ethyl chloroformate with a reaction medium containing palladium chloride in complex association with triphenylphosphine to produce acetaldehyde. The invention has utility in the manufacture of an aldehyde by reacting an alcohol with phosgene to produce a chloroformate which is then converted to an aldehyde by the process of the invention.

3,720,719

PROCESS FOR POLYMERIZATION OF TETRAHYDROFURAN

Kazuo Matsuda, Wakayama; Yoshiaki Tanaka, Osaka, and Takeyo Sakai, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Chuo-ku, Tokyo, Japan

Filed Sept. 13, 1971, Ser. No. 180,175

Claims priority, application Japan, Sept. 16, 1970, 45/81008

Int. Cl. C07c *41/00*, *43/00*

U.S. Cl. 260—615 B 7 Claims

Tetrahydrofuran is polymerized in the presence of a catalyst system of 5–50 percent by weight of fuming sulfuric acid, based on the weight of tetrahydrofuran, and 0.008–90 percent by weight of a metal belonging to Group V or VI in the Periodic Table, based on the free SO_3 content in the fuming sulfuric acid.

3,720,720

6-(HYDROXYALKYL)BENZHYDROLS

Werner Metlesics, Vienna, Austria, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Jan. 30, 1967, Ser. No. 612,321, now Patent No. 3,558,649, dated Jan. 26, 1971, which is a continuation-in-part of application Ser. No. 487,619, Sept. 15, 1965. Divided and this application Aug. 27, 1970, Ser. No. 67,560

Int. Cl. C07c *31/14*

U.S. Cl. 260—618 B 3 Claims

Novel 1-phenyl-2-aminoalkylisoindoline derivatives have been prepared and shown to exhibit useful anorexigenic properties.

3,720,721

HALOGENATED BIPHENOLS AND METHODS FOR PREPARING THE SAME

Hans-Dieter Becker, Goteborg, Sweden, and Alfred R. Gilbert, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed July 9, 1970, Ser. No. 53,648

Int. Cl. C07c *39/12*

U.S. Cl. 260—620 13 Claims

Halobiphenols can be produced from precursor diphenoquinones by effecting reaction between the diphenoquinone and a hydrogen halide, such as hydrogen chloride, while the diphenoquinone is suspended in a liquid medium of the class of water, lower alkanols and mixtures of water and said alkanols. The biphenols thus obtained can be used as antioxidants or as intermediates in the preparation of other diphenoquinones and polymeric compositions useful in the coating and insulating arts.

3,720,722

NOVEL ALUMINUM FLUORIDE CATALYST AND PROCESS FOR HYDROFLUORINATING ACETYLENE USING SAME

Hiroyuki Wada, Kyoto; Yasumasa Kawakami, and Tutomu Kamihigoshi, both of Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 770,337, Oct. 24, 1968. This application Feb. 18, 1971, Ser. No. 116,672

Int. Cl. C07c *17/08*

U.S. Cl. 260—653.4 8 Claims

Process for hydrofluorinating acetylene which comprises reacting acetylene with hydrogen fluoride in the vapor phase and in the presence of ϵ-aluminum fluoride at a temperature from about 200°C to about 380°C to produce vinyl fluoride and 1,1-difluoroethane, said ϵ-aluminum fluoride is being prepared by evaporating an aqueous hydrofluoric acid solution of aluminum fluoride to dryness under vacuum at a temperature from 30°to 120°C optionally followed by heating the resulting product at a temperature from 120° to 500°C.

3,720,723

PROCESS FOR PREPARING UNSATURATED CHLOROHYDROCARBONS AND SATURATED POLYCHLOROHYDROCARBONS BY OXYCHLORINATION OF HYDROCARBONS AND CATALYST SYSTEM THEREFOR

Ervin G. Pritchett, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 529,899, Jan. 3, 1966, abandoned. This application Nov. 28, 1969, Ser. No. 876,187

Int. Cl. C07c *17/10*

U.S. Cl. 260—658 R 11 Claims

1. A process for the preferential oxychlorination of ethane and/or ethyl chloride as a reactant to form 1,2-dichloroethane as the major reaction product, which comprises feeding the reactant ethane and/or ethyl chloride in the vapor phase in admixture with hydrogen chloride in an amount within the range from about 0.05 to about 5 equivalents per mole of the reactant and with molecular oxygen in an amount within the range from about 0.2 to about 1.5 moles per equivalent of hydrogen chloride in contact with a catalyst consisting essentially of a copper chloride and a Group II b metal chloride in an amount within the range from about 20 to about 70 mole percent based on the moles of copper, at a temperature within the range from 250° to 400°C, and recovering 1,2-dichloroethane as the major reaction product.

3,720,724

DEHYDROGENATION CYCLOHEXANE OR MONO- OR POLYALKYLCYCLOHEXANES

Donald C. Tabler, Bartlesville, Okla., assignor to Phillip Petroleum Company, Bartlesville, Okla.

Filed June 3, 1970, Ser. No. 43,203

Int. Cl. C07c *5/18*

U.S. Cl. 260—668 D 6 Claims

A method and catalyst for dehydrogenating cyclohexane and alkyl-substituted cyclohexanes to the corresponding aromatic compounds, the method involving contacting the cyclohexane or alkyl-substituted cyclohexane in the presence of hydrogen with a supported molybdenum-antimony catalyst.

3,720,725

ALKYLATION PROCESS

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

Filed June 25, 1971, Ser. No. 157,044

Int. Cl. C07c *3/56*

U.S. Cl. 260—671 C 7 Claims

An aromatic hydrocarbon, such as benzene or toluene, is alkylated with an alkene while in contact with a catalyst composition comprising a molybdenum halide, an alkylaluminum dihalide, and a proton donor. In accordance with preferred embodiments of the invention, the alkene is a normally gaseous alkene, and the catalyst composition consists essentially of molybdenum pentachloride, ethyl aluminum dichloride, and ethanol. The nature of the product may be varied by adding the alkene before or after the catalyst composition.

3,720,726

TRANSALKYLATION OF ALKYLAROMATIC HYDROCARBONS IN CONTACT WITH A ZEOLITE CATALYST COMPOSITION

Roy T. Mitsche, Island Lake, and Edward Michalko, Lombard, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 20,024, Mar. 16, 1970. This application Mar. 27, 1972, Ser. No. 238,622

Int. Cl. C07c *3/62*

U.S. Cl. 260—672 T 8 Claims

A process for the transalkylation of alkylaromatic hydrocarbons. Transalkylation of alkylaromatic hydrocarbons, such as toluene, is effected at transalkylation conditions in contact with a catalyst comprising from about 60 to about 90% of a zeolite having a mordenite crystal structure containing alumina fixed in combination therewith. The catalyst is characterized by a method of preparation.

3,720,727

PURIFICATION OF ACETYLENICALLY UNSATURATED HYDROCARBONS

Calvin L. Daniels, and James M. Watson, both of Big Spring, Tex., assignors to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed Dec. 22, 1971, Ser. No. 211,064

Int. Cl. C07c *7/02*

U.S. Cl. 260—674 R 9 Claims

A process for the separation of acetylenically unsaturated aromatic hydrocarbons from mixtures containing such hydrocarbons in admixture with vinyl substituted aromatic hydrocarbons, said process comprising contacting said mixture with a halogen selected from the group consisting of bromine, chlorine and mixtures thereof, under halogenation conditions, said halogen being present in an amount such as to halogenate the vinyl substituents of said vinyl substituted aromatic hydrocarbons, and thereafter separating and recovering said acetylenically unsaturated aromatic hydrocarbons.

3,720,728

JET FUEL PARAFFIN PRODUCTION

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 809,001, Mar. 20, 1969, which is a continuation-in-part of abandoned application Ser. No. 723,886, Apr. 24, 1968. This application Mar. 11, 1971, Ser. No. 123,476

Int. Cl. C07c *5/10, 9/00;* C10g *13/02*

U.S. Cl. 260—676 R 9 Claims

Jet fuel paraffinic hydrocarbons are produced from cyclic hydrocarbons, either cycloparaffinic, or aromatic, or mixtures thereof. The process involves hydrogenative cracking, or ring-opening hydrogenation, in contact with a catalyst containing a Group VII–B metal component. The paraffinic product is rich in normal paraffins, and is well-suited for use as a jet fuel blending component.

3,720,729

PYROLYSIS OF HYDROTREATED FEEDSTOCKS

Morgan C. Sze, Upper Montclair, N.J., and Nicholas C. Kafes, Astoria, N.Y., assignors to The Lummus Company, Bloomfield, N.J.

Filed Nov. 2, 1970, Ser. No. 86,281
Int. Cl. C07c 3/00
U.S. Cl. 260—683 R 17 Claims

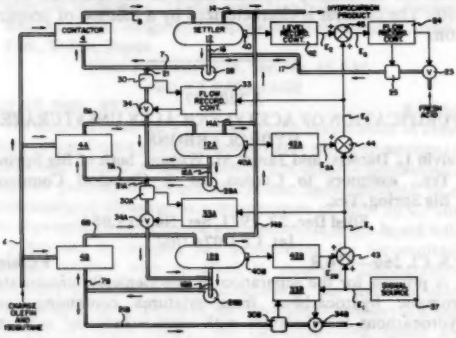
Heavy hydrocarbon feedstocks are subjected to a hydrogenation pre-treatment prior to pyrolysis, said hydrogenation step being so controlled as to avoid hydrocracking and being carried out at a temperature of from about 640° to about 800° F and at a pressure of from about 750 to about 1,250 psig when a significantly increased yield of mononuclear aromatics is desired and at a pressure of from about 1,250 to about 3,000 psig when a significantly increased yield of 1,3-butadiene is desired.

3,720,730

METHOD FOR CONTROLLING A CASCADE SYSTEM

Walker L. Hopkins, and Richard R. Edwards, both of Grooves, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Feb. 24, 1971, Ser. No. 118,374
Int. Cl. C07c 3/54; E03b 1/00; F17d 1/00
U.S. Cl. 260—683.58 4 Claims



A cascade system of series-connected elements senses and controls liquid levels in these elements and senses and controls flow rates of liquid flowing through the series of elements and also of liquid being received and discharged by the system. A signal corresponding to a change in the flow rate of liquid being received by the system (or discharged by the system) along with at least one acid level change provides control signals (1) to regulate each flow rate of liquid between the elements and (2) to regulate the flow rate of liquid that is to be correspondingly discharged (or received) in accordance with said change.

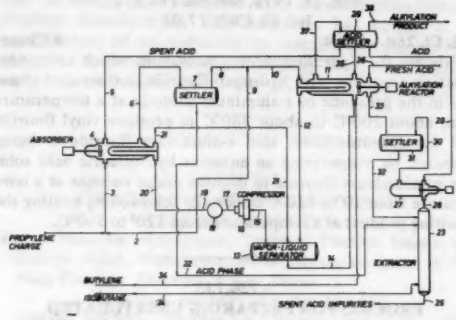
3,720,731

ALKYLATION PROCESS EMPLOYING FLASH VAPORIZATION OF EXCESS OLEFIN FROM AN OLEFIN ABSORPTION STEP

Henry D. Moorer, Richmond, Va., and Richard W. Stokeld, Jr., Anacortes, Wash., assignors to Texas Inc., New York, N.Y.

Filed Aug. 23, 1971, Ser. No. 173,893
Int. Cl. C07c 3/54
U.S. Cl. 260—683.62 12 Claims

Method for providing refrigeration and increasing spent acid recovery in a sulfuric acid alkylation process comprising an alkylation reaction and an olefin absorption reaction involving reacting spent acid catalyst with a molar excess of olefin in an olefin absorber, separating the olefin absorber effluent into an acid phase and an olefin phase, extracting the resulting dialkyl sulfates from the acid phase and passing them to alkylation, passing the olefin phase into indirect heat exchange contact with the alkylation reaction and the olefin absorption reaction, flash vaporizing a portion of the olefin to provide necessary refrigeration, and recirculating at least a portion of the olefin recovered from the heat exchange to the olefin absorption reaction.



3,720,732

BIAXIALLY ORIENTED POLYCARBONATE MODIFIED POLYESTER FILM

Robert J. Sevenich, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 761,817, Sept. 23, 1968. This application Sept. 18, 1970, Ser. No. 73,660
Int. Cl. B29d 7/24; C08d 9/04; C08g 39/10
U.S. Cl. 260—860 6 Claims

Physically blending small amounts of polycarbonate resin into polyethylene terephthalate resin which is to be extruded into a film and thereafter oriented, imparts unexpectedly superior heat stability to the ultimate film. This film also displays improved "slip" properties, not only permitting the omission of conventional hard inorganic slip agents but also attaining a more uniform surface. Electrical properties are also improved.

3,720,733

POLYACRYLONITRILE POLYMER MIXTURES WITH AN AFFINITY FOR ACID DYES CONTAINING A CYCLIC IMIDE POLYMER

Heinrich Rinkler; Horst Wieden, both of Dormagen; Helmut Engelhard, Leverkusen, and Alfred Nogaj, Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 21, 1970, Ser. No. 30,590
Claims priority, application Germany, April 26, 1969, P 19 21 362.8
Int. Cl. C08f 31/04
U.S. Cl. 260—895 18 Claims

Polymer mixtures with high affinity for acid dyes consisting essentially of at least 60 percent by weight of an acrylonitrile polymer and at most 40 percent by weight of a cyclic imide copolymer, the imide nitrogen being substituted by an aliphatic or aromatic radical containing another tertiary or quaternary nitrogen atom.

3,720,734

PVC COMPOSITIONS CONTAINING CARBOXYLIC ACID ANHYDRIDE COPOLYMERS

Adam F. Kopacki, Westwood, N.J., and John H. Deatcher, Lake Peekskill, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 799,907, Feb. 17, 1969, abandoned. This application April 15, 1971, Ser. No. 134,488
Int. Cl. C08f 29/24
U.S. Cl. 260—899 9 Claims

A polymeric composition consisting essentially of a solid polymer selected from vinyl chloride homopolymers having increased impact strength by adding thereto a responsive amount of copolymers of unsaturated carboxylic acid anhydrides.

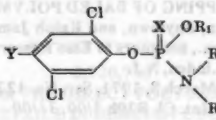
3,720,735

PHOSPHORUS AMIDATES

Henry Martin, Basel, and Ernst Beriger, Allschwil, both of Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

Continuation of Ser. No. 639,044, May 17, 1967, abandoned. This application Aug. 5, 1970, Ser. No. 61,391
Claims priority, application Switzerland, May 26, 1966, 7663/66
Int. Cl. C07f 9/22; A01n 9/36
U.S. Cl. 260—959 12 Claims

The present invention relates to new phosphorus amidates of the general formula



in which X represents an oxygen or a sulphur atom, Y represents a bromine or an iodine atom, R_1 represents a low alkyl or alkenyl radical, R_2 represents a hydrogen atom or a low alkyl or alkenyl radical and R_3 represents a low alkyl or alkenyl radical, or in which R_2 and R_3, together with the nitrogen atom to which they are bound, constitute a heterocyclic radical which may also contain other hetero atoms in addition to the said nitrogen atom as well as to pesticidal preparations which contain such phosphorus amidates as active ingredients together with a carrier.

3,720,736

PROCESS FOR THE SYNTHESIS OF DIHYDROCARBONPHOSPHINATES

James E. Quick, Pittsburgh, Pa., and David L. Venezky, Fairfax County, Va., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Mar. 17, 1970, Ser. No. 20,391
Int. Cl. C07f 9/32
U.S. Cl. 260—973 7 Claims

A process for the synthesis of a dihydrocarbonphosphinate wherein a dihydrocarbonhalophosphine is oxidized in the presence of a dihydrocarbon sulfoxide, such as dimethylsulfoxide, and the reaction mixture thereof is reacted with an appropriate alcohol to form the desired ester.

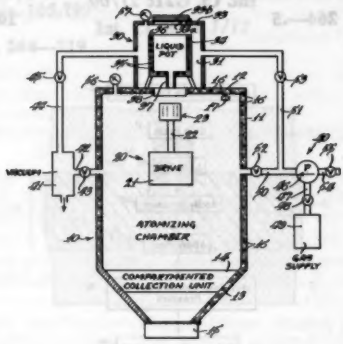
3,720,737

METHOD OF CENTRIFUGAL ATOMIZATION

Daniel J. Klaphaak, and Lawrence G. Barnes, both of Royal Oak, Mich., assignors to Atomization Systems Inc., Birmingham, Mich.

Filed Aug. 10, 1971, Ser. No. 170,575
Int. Cl. B01j 2/04
U.S. Cl. 264—8 15 Claims

Method of carrying out centrifugal atomization of a liquid to form solid particles, by spinning the liquid in a cup having a perforated upright sidewall so as to project fine streams of the liquid at high velocity through the perforations into a sealed chamber in which a stagnant gaseous medium is maintained at a temperature to form solid particles from the liquid, while the composition and density of the medium are coordinated to maintain a ratio of viscosity to density which is substantially less than that of air at atmospheric pressure. Preferably the stagnant gaseous medium is maintained at a pressure substantially in excess of one atmosphere. The method is applicable to the formation of powders from melted solids or to centrifugal spray drying of solids in solution.

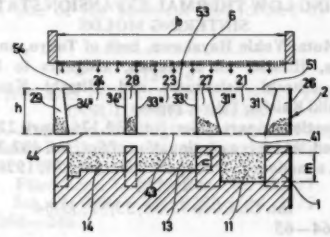


3,720,738

METHOD FOR PRODUCING COMPRESSION-MOLDED ARTICLES

Edmund E. Munk, Oberstenfeld, Germany, assignor to Werzalit-Presshalzeverk, J. F. Werz Jr., K G, Oberstenfeld near Stuttgart, Germany

Filed Dec. 9, 1969, Ser. No. 883,432
Int. Cl. B29j 5/00
U.S. Cl. 264—37 7 Claims



A method of producing molded articles from a mixture of comminuted material and binder in which the mixture is dropped at a substantially uniform rate onto a filling gate which is provided with at least one aperture having a lower outlet end in vertical alignment with the open end of at least one compartment. At least one wall defining the aperture extends outwardly and upwardly inclined with respect to the outlet end so that the mixture dropping on the inclined wall is intercepted and slides down the inclined wall into a portion of the compartment adjacent thereto so that this portion of the compartment will receive a greater quantity of the mixture than the remainder thereof. The principle may also be used in a mold having a plurality of compartments of different depths which have to be filled substantially to the same upper level. The thus filled mold is then placed in a press into which the mixture is compressed to a solid article which is thereafter removed from the mold.

3,720,739

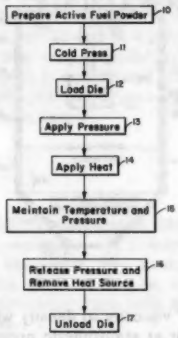
NUCLEAR FUEL PRESSING PROCESS

Laird T. Hagle, Fremont, and Chester M. Ryer, San Jose, Calif., assignors to General Electric Company

Continuation-in-part of abandoned application Ser. No. 690,248, Dec. 13, 1967. This application Apr. 14, 1969, Ser. No. 815,615

Int. Cl. G21c *21/00*

U.S. Cl. 264—.5 10 Claims



A pressing technique for producing nuclear fuel pellets for use in nuclear reactors is disclosed. Typically, an active nuclear fuel material is pressed at a pressure of from about 6000 to about 10,000 p.s.i. and a temperature from about 900 to about 1300° C. for about 3 to about 20 minutes. For good results, it is necessary that full pressure be applied before the temperature is increased to the temperature at which significant plastic flow begins in the fuel material.

3,720,740

LOW PRESSURE SINTERING OF BORON NITRIDE USING LOW THERMAL EXPANSION STATIC SINTERING MOLDS

Akinori Muta; Yukio Hayakawa, both of Tokyo, and Makoto Manaka, Hitachi, all of Japan, assignors to Kabushiki Kaisha Hitachi Seisakusto and Hitachi Kasei Kogyi Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 830,176, April 22, 1969, abandoned, which is a continuation of Ser. No. 482,268, Aug. 24, 1965, abandoned. This application June 24, 1970, Ser. No. 49,516

Int. Cl. C04b *35/58, 33/32, 33/64*

U.S. Cl. 264—65 13 Claims

Boron nitride articles are manufactured by first cold pressure molding boron nitride powder and then sintering the resultant boron nitride article while the article is confined in a sintering mold so that the free expansion of the article during the sintering process is restricted.

3,720,741

MELT SPINNING PROCESS

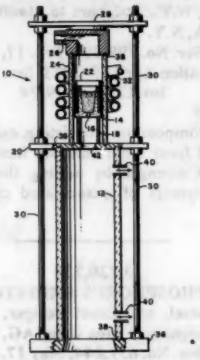
Robert E. Cunningham; Wilbur J. Privott, Jr., and Lawrence F. Rakestraw, all of Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 596,286, Nov. 22, 1966, abandoned. This application Oct. 3, 1969, Ser. No. 863,707

Int. Cl. B28b *3/20*; B22d *11/00*

U.S. Cl. 264—82 11 Claims

A low stress spinning process wherein disruption of low viscosity streams due to the viscous drag forces imposed upon the extruding body is minimized by maintaining the propagation velocity of drag-sustained deviations less than the stream velocity to prevent the upstream migration of such deviations



into the low strength molten region. This interrelationship of propagational and spinning velocities may be accomplished by a variety of techniques for controlling the interaction of viscous drag and tensional forces upon the stream.

3,720,742

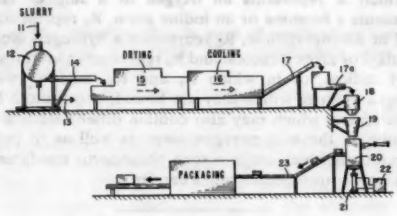
WRAPPING OF BALED POLYMERS

Marcus H. Shelton, Baytown, and Ralph James, Jr., Channelview, both of Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed March 8, 1971, Ser. No. 122,071

Int. Cl. B29h *3/00, 31/00*

U.S. Cl. 264—102 11 Claims



Polymeric material such as solid particulate polymers as illustrated by butyl rubber, Vistanex, polyolefins such as polyethylene and polypropylene, and the like which contain residual moisture and/or gasiform material are baled and simultaneously encapsulated or wrapped in a baling zone, the interior wall of which is heated, and depending on the material being baled, subsequent to coating the wall with a polyolefin while applying mechanical pressure and reduced pressure to remove the moisture and/or gasiform material to form the bale.

3,720,743

PROCESS FOR PRODUCING HIGH PERFORMANCE CRIMPED RAYON STAPLE FIBER

Hugh Dexter Stevens, Long Valley, and Thomas Emery Muller, Springfield, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,485

Int. Cl. D01f *3/12*; D01d *5/22*

U.S. Cl. 264—168 5 Claims

Highly crimped, high tenacity rayon filaments and staple fibers are produced by spinning a viscose spinning solution

containing a mixture of modifiers and having a low viscose salt (NaCl) index, into a coagulating-type spin bath to obtain coagulated, incompletely regenerated viscose filaments. The coagulated viscose filaments are withdrawn from the spin bath and stretched up to about 120 percent in length while the filaments are still substantially soluble in dilute alkali solution. The filaments are then completely regenerated and the tension is relaxed to produce highly crimped filaments or staple fiber products which are finished by conventional washing, desulfurization and finishing techniques.

3,720,744

PROCESS FOR TREATING ELASTOMERIC FIBERS

Joseph Germano Santangelo, Norristown, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 786,821, Dec. 16, 1968, which is a continuation of application Ser. No. 381,554, July 9, 1964, both now abandoned. This application Mar. 23, 1971, Ser. No. 127,335

Int. Cl. B29c *25/00*; D01f *7/00*

U.S. Cl. 264—205 **10 Claims**

An improved spandex type fiber of low permanent set and a method for producing such fibers which method comprises reacting the polymer with a peroxide cross-linking agent and subsequently heat treating a fiber spun from said polymer at a temperature of about 50 to 200 degrees centigrade to effect a cross-linking of the polymer.

3,720,745

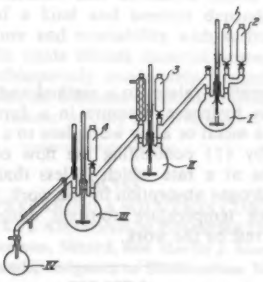
PROCESS FOR THE DIRECT POLYMERIZATION OF ACRYLONITRILE IN DIMETHYL FORMAMIDE

Josef Konig, Munich, and Erich Schiefer, Offenbach(Main), both of Germany, assignors to Davy-Ashmore Aktiengesellschaft

Continuation-in-part of Ser. No. 476,584, Aug. 2, 1965, abandoned. This application June 5, 1970, Ser. No. 43,932

Int. Cl. C08f *3/76*; G08f *15/02*

U.S. Cl. 264—206 **15 Claims**



Methods for solution polymerization of acrylonitrile and direct spinning of the polyacrylonitrile polymers and copolymers produced thereby, which includes the steps of dissolving monomers in dimethyl formamide and solution polymerizing them in the presence of a three-component catalyst system consisting essentially of a persulphate redox catalyst system and a cerium (IV) salt co-catalyst, and directly spinning the resultant polymer-containing solution by a dry spinning process.

3,720,746

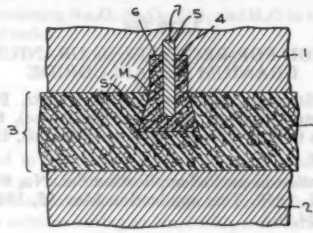
METHOD FOR MOLDING UNDERCUT SLOTS IN MOTOR VEHICLE BODY PARTS

Kurt Schwenk and Hermann Hablitzel, Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Continuation-in-part of abandoned application Ser. No. 773,409, Nov. 5, 1968. This application Jan. 12, 1971, Ser. No. 105,799

Int. Cl. B29c *1/12*

U.S. Cl. 264—219 **1 Claim**



In a mold comprising separable mold parts, one of the mold parts is formed with an elongated first slot opening into the mold cavity and a similarly elongated second slot in the bottom of the first slot and of narrower width than the first slot. A substantially hard non-deformable stiffening member is removably held io the second slot with a free edge projecting into the mold cavity, and a deformable profile strip of U-shaped cross-section is supported on this member with its closed maximum width portion extending across the free edge of said member within the mold cavity and with its legs received in the first slot on opposite sides of said member. When an article is then formed in the mold cavity and stripped from the mold, it withdraws both profile strip and the stiffening member from the respective slots, whereupon removal of the stiffening member from the deformable profile strip allows substantial deformability of the profile strip into the space formerly occupied by the stiffening member so that the profile strip may then be withdrawn through the narrow open side of the undercut slot formed by it in the article.

3,720,747

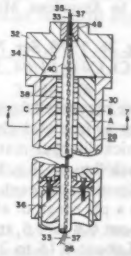
PROCESS FOR COLOR CODING TFE INSULATED CABLES

Robert W. Anderson, Burlington, and Aime Joseph Perreault, South Burlington, Vt., assignors to Haveg Industries, Inc., Wilmington, Del.

Filed Sept. 1, 1970, Ser. No. 68,707

Int. Cl. B29c *9/00*; B29f *3/10, 3/12*

U.S. Cl. 264—246 **7 Claims**



A TFE extrusion preform is made up of a plurality of colored sections corresponding to the same number of

wires which are to be insulated. The preform is arranged such that each colored section will cover a conductor wire upon extrusion. The resultant product is a multi-conductor cable with the insulation of each conductor integral with the insulation of the other conductor but of different colors for color coding (identification). Modifications of this idea are also disclosed whereby color coding is effected by different colored stripes rather than utilizing the various colors of insulation.

3,720,748

METHOD FOR RECOVERING URANIUM AS URANIUM HEXAFLUORIDE

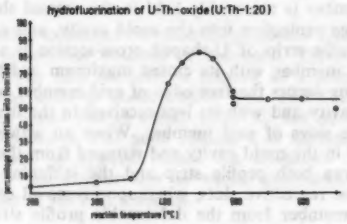
Joachim Massonne, Hannover, Rolf Kreutz, Bemerode, and Heinz Friedrich, Konstanz (Bodensee), Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Continuation-in-part of application Ser. No. 805,140, Mar. 7, 1969. This application May 15, 1969, Ser. No. 824,963

Claims priority, application Germany, May 18, 1968, P 17 71 401.1; Mar. 9, 1968, P 16 67 847.0; Mar. 21, 1968, P 17 67 015.4

Int. Cl. C01g *43/06*

U.S. Cl. 423—4 **21 Claims**



Uranium is recovered as the hexafluoride from coated or uncoated nuclear fuel by reacting the fuel at a temperature of at least 500° C. with a mixture of oxygen and gaseous hydrogen fluoride followed by reaction with elementary fluorine at 500 to 750° C.

3,720,749

TREATMENT OF NICKEL LEACH LIQUOR

Melvin L. Taylor, Arvada, and Nelson J. Ronzio, Golden, both of Colo., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Aug. 26, 1970, Ser. No. 67,249

Int. Cl. C01g *51/04, 53/04*

U.S. Cl. 423—141 **12 Claims**

Nickel and cobalt are recovered from acid leach liquor containing such impurities as iron and aluminum obtained from the acid leaching of nickeliferous materials (such as sulfuric acid or nitric acid leach liquor), e.g. low-grade nickeliferous oxidic materials by adjusting the leach liquor, in the case of a sulfuric acid leach, to a pH range of about 0.5 to 4, or, more advantageously, to about 0.6 to 1.5, or in the case of a nitric acid leach to a pH of about 0.15 to 2.5, at an elevated temperature in excess of 130°C at a pressure ranging from about 225 psig to 1000 psig to precipitate major amounts of the iron and aluminum, which precipitate is then separated from the leach liquor. Thereafter, the nickel and cobalt are separated from the treated leach liquor.

3,720,750

SELECTIVE RECOVERY OF COBALT FROM AN AMMONIACAL CARBONATE SOLUTION CONTAINING COBALT AND NICKEL

Tadeusz Karol Wiewiorowski, New Orleans, and David James Miller, Gretna, La., assignors to Freeport Minerals Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 143,267, May 13, 1971. This application Oct. 19, 1971, Ser. No. 190,636

Int. Cl. C01g *51/00, 53/00*

U.S. Cl. 423—150 **12 Claims**

When cobalt is precipitated from ammoniacal carbonate solutions containing both cobalt and nickel by addition of a sulfiding agent to the solution, the amount of of nickel co-precipitated with the cobalt is substantially reduced if, after addition of the sulfiding agent, the solution is treated with an oxygen-containing gas. This produces a two-fold desirable result: a precipitate enriched in cobalt and a mother liquor enriched in nickel.

The precipitate is further enriched in cobalt by first thickening the slurry containing the precipitate and then treating the thickened slurry with an oxygen-containing gas. This treatment solubilizes some of the nickel sulfide in the liquid phase of the slurry serving to simultaneously increase the cobalt content of the precipitate and the nickel content of the mother liquor.

3,720,751

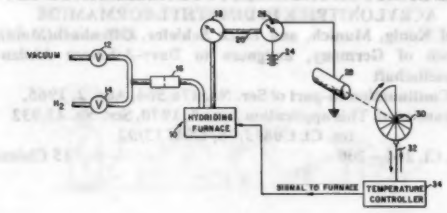
HYDRIDING PROCESS

Robert Van Houten, 7685 De Mar Road, Cincinnati, Ohio 45243

Continuation-in-part of application Ser. No. 240,186, Nov. 26, 1962. This application June 15, 1967, Ser. No. 647,261

Int. Cl. C01b *16/00;* **C01f** *15/00*

U.S. Cl. 423—252 **1 Claim**



This invention relates to a method and means for controlling the hydrogen pressure in a furnace system for hydriding a metal or alloy workpiece to a massive hydride structure by (1) controlling the flow of hydrogen into said system at a rate which is less than the maximum rate of hydrogen absorption by the work, and (2) holding the furnace temperature constant during a period of thermal arrest by the work.

3,720,752

MASSIVE METAL HYDRIDE STRUCTURES AND METHODS FOR THEIR PREPARATION

Robert Van Houten, 7685 De Mar Road, Cincinnati, Ohio 45243

No Drawing. Continuation-in-part of application Ser. No. 240,186, Nov. 26, 1962. This application Apr. 11, 1967, Ser. No. 634,019

Int. Cl. C01g *43/00*

U.S. Cl. 423—255 **7 Claims**

A massive metal hydride, deuteride, or tritide matrix structure selected from at least one metal consisting of a Group III–B metal (Sc, Y, La); a Group IV–B metal (Zr, Ti, Hf); a Group V–B metal (V, Nb, Ta); a 4*f* rare earth metal having an atomic number 57–71, inclusive; 5*f* rare earth metal having an atomic number 90–100, inclusive,

and alloys thereof, and a grain growth inhibiting concentration of at least one additive selected from carbon, graphite, boron; a carbide, boride, or hydride of the matrix metal dispersed in the matrix structure.

3,720,753

METHOD FOR PREPARING A SMALL PORE SYNTHETIC ZEOLITE

Harry E. Robson, Baton Rouge, La., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Feb. 22, 1971, Ser. No. 117,755
Int. Cl. C01b *33/28*
U.S. Cl. 423—329 3 Claims

A synthetic small pore crystalline zeolite having a structure and X-ray diffraction pattern similar to that of synthetic zeolite ZK-5 is prepared by digesting an aqueous reactant mixture containing silica, alumina, and either a mixture of potassium oxide and cesium oxide, or potassium oxide, cesium oxide and sodium oxide at a temperature of from 60° to 120°C. The zeolite product contains cesium cations as well as potassium cations in its as-synthesized form. A substantial portion of the cations is in an inaccessable position in the crystal lattice so that it is essentially unexchangable. The zeolite product is used as a selective adsorbent or as a catalyst after suitable modification by base exchange and deposition of a catalytically active metal.

3,720,754

PROCESS FOR THE ENTRAPMENT AND RECOVERY OF SULFUR DIOXIDE GAS

Harold W. Wilson, El Paso, Tex., assignor to The Golden Cycle Corporation

No Drawing. Continuation-in-part of application Ser. No. 777,503, Nov. 20, 1968. This application Dec. 18, 1970, Ser. No. 99,509
Int. Cl. C01b *17/60*
U.S. Cl. 423—244 11 Claims

A process is disclosed wherein sulfur dioxide gas or sulfur dioxide containing waste stack gases, are passed into a bed of mixed metallic oxides and silicates which contains not less than about 1% or more than about 10% of its weight in added water to produce a dry, particulate product comprising metallic sulfite salts, meta-silicic acid, adsorbed sulfur dioxide, and unreacted oxidic and siliceous material of a kind and amount dependent upon the chemical nature and reactability with sulfur dioxide gas of the metallic oxide silicate material processed. The product when subsequently moderately heated releases substantially equimolar amounts of sulfur dioxide in conjunction with the release of only minor amounts of water.

3,720,755

PROCESS FOR PREPARING A SOLUTION CONTAINING HYDROXYL AMMONIUM PHOSPHATE

Coenraad J. Duyverman, Sittard, and Martin J. Gorgels, Stein both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed March 26, 1971, Ser. No. 128,495
Claims priority, application Netherlands, May 24, 1971, 7004350
Int. Cl. C01b *15/16, 25/26, 25/16*
U.S. Cl. 423—307 4 Claims

A process for preparing a solution of hydroxylammonium phosphate which includes catalytic reduction of nitrate ions in an aqueous solution containing phosphoric acid using molecular hydrogen.

In order to maintain the activity of the catalyst the phosphoric acid to be fed to the synthesis zone is first freed of heavy metal contaminants by contacting the phosphoric acid for a sufficient time with hydrogen and an absorbent consisting of a metal of the platinum group.

3,720,756

PRODUCTION OF SYNTHETIC ZEOLITES OF FAUJASITE STRUCTURE

Friedrich Schwochow, Leverkusen, and Gerhard Heinze, Schildgen, both of Germany, assignors to Farbenfabriken Bayer Aktiengeilschaft, Leverkusen, Germany

Filed Jan. 5, 1971, Ser. No. 104,178
Claims priority, application Germany, Jan. 22, 1970, P 20 02 626.0
Int. Cl. C01b *33/28*
U.S. Cl. 423—329 4 Claims

A gel containing Na_2O, Al_2O_3, SiO_2 and H_2O in the approximate molar ratios:

$$SiO_2 : Al_2O_3 = 3.5-5$$

$$Na_2 : SiO_2 = 2-3$$

$$H_2O : Na_2O = 35-45$$

is subjected to hydrothermal crystallization at about 60° to 120° C. The gel is formed by combining an aluminate solution and a sodium silicate solution in suitable proportions, the sodium silicate solution having an $Na_2O:SiO_2$ mole ratio of at least 1.5:1 and an $H_2O:Na_2O$ mole ratio of about 35–45:1. By holding the sodium silicate for at least 15 minutes, preferably about 1 to 4 hours at about 10° to 40° C., the gel subsequently produced may be stirred during crystallization and the crystals will nonetheless have the faujasite structure and the approximate composition $Na_2O.Al_2O_3.(2–2.5)\ SiO_2.(0–8)H_2O$.

3,720,757

CLOSED POND SYSTEM FOR WET PROCESS PHOSPHATE PLANTS

Rufus G. Hartig, Dover, Fla.
(230 Hillsboro Hotel Bldg., Tampa, Fla. 33602)

Filed Aug. 3, 1970, Ser. No. 60,226
Int. Cl. C01b *33/08*
U.S. Cl. 423—341 2 Claims

Closed pond system or process for eliminating the conventional pound systems of wet process phosphoric acid complexes, and to remove fluorine from process gas streams, wherein liquid effluents from wet process phosphoric acid complexes, including scrubber liquor from gas scrubbing operations of the complex, are cooled and clarified, and the liquid from the clarifier recycled to the phosphate complex, the sludge or slurry being filtered to remove solids, the solids being calcined to drive off fluorine-containing gases. The calcined solids consist principally of sodium fluoride (NaF) which is recycled to the clarifier overflow to be mixed with the liquid returned to the phosphate complex. In the phosphate complex the liquid from the clarifier is used to scrub plant gases, and is mixed with other scrubber liquors from the plant, and recycled again to the cooling tower and clarifier. The HF in the effluent plant liquids is converted to SiF_4 by maintaining an excess of SiO_2, and the NaF reacts with the SiF_4 to form Na_2SiF_6. The Na_2SiF_6 is calcined to produce NaF and gaseous SiF_4, the latter being scrubbed with water to form H_2SiF_6 of commercial quality.

3,720,758

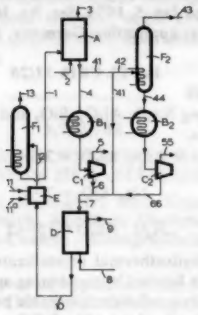
PROCESS FOR THE CONTINUOUS PREPARATION OF AN AQUEOUS SOLUTION OF A HYDROXYLAMMONIUM SALT

Abraham H. De Rooij, Geleen, and Pierre A. M. Aggenbach, Brunssum, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Sept. 21, 1970, Ser. No. 73,905
Claims priority, application Netherlands, Sept. 20, 1969, 6914306
Int. Cl. C01c *1/24, 1/00*; C07c *131/10*
U.S. Cl. 423—388 5 Claims

Hydroxylammonium salt solution prepared by catalytically reducing nitrate ions in aqueous solution using molecular

hydrogen in a buffered reaction medium containing at least twice the number of sulphate ions as phosphate ions in which the ammonia produced as a by-product of the reaction is removed from the resulting solution as ammonium sulphate is disclosed.



3,720,759

PROCESS FOR THE PRODUCTION OF CARBON AND GRAPHITE FIBERS

Dietrich Overhoff, Augsburg, Germany, assignor to Sigri Elektrographit GmbH, Augsburg, Germany

Filed May 21, 1970, Ser. No. 39,517

Claims priority, application Germany, April 7, 1970, P 20 16 445.8

Int. Cl. C01b *31/07*

U.S. Cl. 423—447 **7 Claims**

Carbon fibers are produced by treating synthetic polymeric fibers with a solution of a condensation agent at a temperature of 180° to 230°C to effect cross-linking and/or cyclization within the polymeric fibers and thereafter heating the treated fibers to a temperature between 200°-300°C in an atmosphere containing an oxidizing gas and, subsequently, in an inert or reducing atmosphere, to a temperature of at least about 1,000°C. Titanium tetrachloride, lead tetrachloride, tin tetrachloride, and tin tetrabromide are used as condensation agents, preferably in the form of complexes in a solvent such as high-boiling ethers and esters. Dimethylformamide is used as a complex former. o-nitroanisole, d-n-butylterephthalate, and iso-octadecylbenzoate are used as both solvent and complex former.

3,720,760

METHOD FOR DETERMINING THE PRESENCE OF REAGIN-IMMUNOGLOBULINS (REAGIN-Ig) DIRECTED AGAINST CERTAIN ALLERGENS, IN AQUEOUS SAMPLES

Hans H:son Bennich, Uppsala, Stig G. O. Johansson, Storvreta, and Leif E. Wide, Uppsala, Sweden, assignors to Pharmacia AB, Uppsala, Sweden

No Drawing. Filed Sept. 6, 1968, Ser. No. 758,131

Int. Cl. A61k *27/04*

U.S. Cl. 424—1 **26 Claims**

An in vitro method for analyzing a body fluid for reagin-immunoglobulins therein that are reactive with allergens which comprises contacting a sample of body fluid with a water-insoluble polymer to which is attached at least one test allergen for a long enough time to allow reaction therebetween and then contacting with either labelled antibodies that are reactive with the reagin immunoglobulins or with antibodies against reagin-Ig and reagin-Ig labelled with a radiation emitting atom or group, separating into a liquid phase and a solid phase, and measuring the radiation emitted from at least one of the two separated phases.

3,720,761

INJECTABLE RADIO-PHARMACEUTICAL SCANNING AGENT AND PREPARATION

William W. Hunter, Jr., 313 West Seventh Avenue, Columbus, Ohio

Filed Oct. 14, 1968, Ser. No. 767,480

Int. Cl. A61k *27/04*

U.S. Cl. 424—1 **6 Claims**

A formation for pharmaceutical preparations and method for preparing same which is characterized by the use of the two through seven carbon polyhydric alcohols to stabilize solid particles suspended in a liquid medium. Using the method of the present invention, the particle size may be more closely controlled due to the excellent stabilization properties of the polyhydric alcohols which inhibits aggregation or clumping of the solid particles in the liquid medium.

3,720,762

SPILANTHOL-CONTAINING COMPOSITIONS FOR ORAL USE

Shigeyoshi Hatasa, Chiba-shi, and Isao Iioka, Tokyo, Japan, assignors to Lion Hamigaki Kabushiki Kaisha, Tokyo-to, Japan

Filed July 7, 1971, Ser. No. 160,382

Claims priority, application Japan, July 11, 1970, 45/60,740; July 14, 1970, 45/61,543

Int. Cl. A61r *7/16*

U.S. Cl. 424—58 **7 Claims**

In composition intended for oral use, such as dentifrices, mouthwashes and chewing gum, a cooling effect is obtained by incorporating therein spilanthol, or the essential oil obtained from *Spilanthes oleracea* Jacquin or *Spilanthes acmella* var. *oleracea*. These materials have a mild anesthetic effect, and provide a pleasant flavor which is strong and lasts for a substantial time. They may usefully be combined with conventional materials such as methanol or peppermint oil which also provide a cooling effect.

3,720,763

PREPARATION FOR REDUCING CEREBRAL EDEMA AND PROCESS OF PREPARING SAME

Shozo Ishii, Tokyo, Japan, assignor to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of application Ser. No. 829,972, June 3, 1969. This application Oct. 18, 1971, Ser. No. 190,177

Claims priority, application Japan, June 5, 1968, 43/37,969

Int. Cl. A61k *17/00*

U.S. Cl. 424—95 **5 Claims**

A preparation, useful for improving impaired consciousness and electroencephalogram abnormalities caused by cerebral edema is obtained by (a) centrifuging homogenized fresh animal brain suspension to provide mitochondria and supernatant (I) and recentrifuging supernatant (I) to obtain supernatant (III); (b) suspending said mitochondria in a suspension medium; (c) freezing and thawing said mitochondria suspension to decompose said mitochondria; (d) centrifuging said decomposed mitochondria suspension to obtain mitochondria debris and supernatant (II); (e) combining supernatants (II) and (III); and (f) dialyzing the combined supernatant to which a small quantity of albumin has been added to produce a diffusate comprising the active preparation.

3,720,764

SYNERGISTIC PREPARATION OF RIFAMPICIN AND PENICILLIN G

Edward Alexander Konopka, Murray Hill, and Justus Melchior Gelzer, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 137,788, Feb. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 809,967, March 24, 1969, Pat. No. 3,644,616. This application Oct. 15, 1970, Ser. No. 81,112
Int. Cl. A61k *21/00*
U.S. Cl. 424—114 1 Claim

Rifamycines or their semisynthetic derivatives, in combination with penicillines or cephalosporines, exhibit synergistic effects against pathogens.

3,720,765

CROSSLINKED PROTEIN WITH ACID ANHYDRIDE AS A RUMINANT FEED MATERIAL

Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 27, 1970, Ser. No. 84,471
Int. Cl. A23k *1/18*
U.S. Cl. 424—177 4 Claims

Improved protein feed material for ruminants which is resistant to digestive breakdown in the rumen but not in the abomasum and/or intestines which comprises the reaction product of a protein-containing feed material and an organic acid anhydride capable of crosslinking protein. Exemplary of such organic acid anhydrides is maleic anhydride.

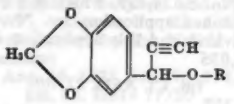
3,720,766

INSECTICIDAL MIXTURES OF O,O-DIMETHYL-O-(2-METHOXY - 4 - CYANOPHENYL)-PHOSPHOROTHIOATE AND 3,4-METHYLENE DIOXYPHENYL PROPYNYLOXY CARBAMATES

Peter E. Letchworth, Mountain View, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,718
Int. Cl. A01n *9/02, 9/28, 9/36*
U.S. Cl. 424—210 14 Claims

A composition of matter is described herein which is used as a synergist for O,O-dimethyl-O-(2-methoxy-4-cyanophenyl)-phosphorothioate insecticide and methods of use. The composition may be defined by the following generic formula



wherein R can be selected from radicals consisting of N-methyl carbamoyl, N-phenyl carbamoyl, N-p-chlorophenyl carbamoyl, benzoyl, acetyl, and 2-pyranyl.

3,720,767

FUNGICIDAL COMPOSITION COMPRISING COPPER 8-OXYQUINOLATE AND COPPER α-AMINO-γ-ETHYLTHIOBUTYRATE

Kaoru Ohmori, Yono-shi, Saitama-ken; Mituo Nakajima, Yatomachi, Saitama-ken; Shuichi Ishida, Ohmiya-shi, and Shiroh Asaka, Yono-shi, Saitama-ken, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed June 6, 1969, Ser. No. 831,252
Claims priority, application Japan, June 21, 1968, 43/42509
Int. Cl. A01n *9/02, 21/00*
U.S. Cl. 424—245 1 Claim

The present invention relates to fungicidal compositions for agricultural and horticultural use comprising one or more kinds of metal salts of α-amino-γ-ethylthio butyric acid such as copper α-amino-γ-ethylthio butyrate, or manganese α-amino-γ-ethylthio butyrate and one or more kinds of 8-oxyquinoline metal complex, such as copper or zinc 8-oxyquinolate along with adjuvants such as dispersing agent, emulsifier, or wetting agent. The composition of the present invention is remarkably effective when applied at low concentration for black spot of pear (*Alernaria kikuchiana*) or Helminthosporium leaf spot (*Cochliobolus miyabeanus*).

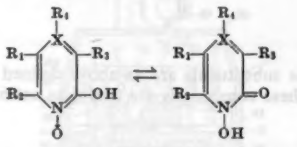
3,720,768

ASPERGILLIC ACID AS AN ANTI-HYPERTENSIVE AGENT

Peter Hadley Jones, Lake Forest, and Yvonne Connolly Martin, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,176
Int. Cl. A61k *27/00*
U.S. Cl. 424—250 1 Claim

Method of treating hypertension by administering to a hypertensive patient a therapeutically effective amount of a compound of the Formula



wherein X is C or N; and R_1, R_2, R_3 and R_4 each are hydrogen, alkyl, cycloalkyl or aryl, with the limitation that R_4 is present only when X is C.

3,720,769

FUNGICIDAL SULFINYLCYANOISOTHIAZOLES

Georg-Alexander Hoyer and Kurt Roder, Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

No Drawing. Filed July 10, 1970, Ser. No. 53,987
Claims priority, application Germany, Aug. 16, 1969, P 19 42 372.4
Int. Cl. A01n *9/14*
U.S. Cl. 424—270 10 Claims

Fungicidal compositions containing sulfinylcyanoisothiazoles.

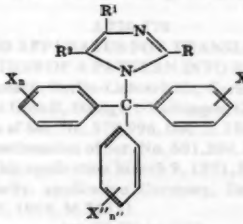
3,720,770

1 - (p-CHLORO - m - NITROPHENYL-DIPHENYL-METHYL)-IMIDAZOLE AS AN ANTIFUNGAL AGENT

Karl Heinz Buchel, Leverkusen, Erich Regel, Wuppertal-Kronenberg, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Sept. 9, 1968, Ser. No. 758,594, now Patent No. 3,660,577. Divided and this application Mar. 19, 1971, Ser. No. 126,277
Claims priority, application Germany, Sept. 15, 1967, F 53,504
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 2 Claims

N-trityl-imidazoles and salts thereof of the formula:

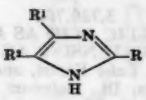


wherein

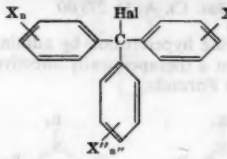
R, R^1 and R^2 are hydrogen, lower alkyl or phenyl, or R^1 and R^2 together form an anellated benzene ring,

X, X' and X'' are alkyl of 1 to 12 carbon atoms or an electro-negative moiety, and
n, *n'* and *n''* are an integer from 0 to 2,

or pharmaceutically acceptable acid salts thereof may be produced by reacting a silver salt or alkali metal salt of an imidazole of the formula:



with a trityl halide of the formula:



wherein the substituents are as above defined and Hal is halogen. These compounds are useful as antimycotics.

3,720,771

3-SUBSTITUTED-1-PHENYL-INDOLINES AND INDOLINONES IN COMPOSITION FOR ALLEVIATING MENTOL DEPRESSION

Antonio Canas-Rodriguez, and Peter Rodway Leeming, both of Canterbury, Kent, England, assignors to Pfizer Inc. New York, N.Y.

Division of Ser. No. 885,321, Dec. 15, 1969, Pat. No. 3,644,403. This application Feb. 14, 1972, Ser. No. 226,291
Claims priority, application Great Britain, Dec. 18, 1968, 60,083/68

Int. Cl. A61v *27/00*

U.S. Cl. 424—274 **5 Claims**

Novel 3-mono-aminoalkyl-1-phenyl-indolines and 2-indolinones are disclosed.

3,720,772

METHODS OF CONTROLLING INSECTS OR NEMATODES BY USING S,S-SUBSTITUTED 2,2-THIO-, SULFINYL-, AND SULFONYL-ALKANYL AND ALKANONE N-SUBSTITUTED CARBAMOYLOXIMES AND THEIR CARBONYL DERIVATIVES

Tomas L. Fridinger and Edward L. Mutsch, Woodbury Township, Washington County, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Application July 11, 1969, Ser. No. 841,142, now Patent No. 3,646,062, dated Feb. 29, 1972, which is a continuation of abandoned application Ser. No. 753,752, Aug. 19, 1968. Divided and this application Feb. 9, 1972, Ser. No. 224,955

Int. Cl. A01n *9/00, 9/12*

U.S. Cl. 424—277 **4 Claims**

Methods of controlling insects, acarids and nematodes by applying to plants or to the soil in which they are growing S,S-substituted thio-, sulfinyl-, sulfonyl- alkanal and -alkanone N-substituted carbamoxyloxime derivatives.

3,720,773

METHOD AND COMPOSITION FOR THE TOPICAL TREATMENT OF HERPETIC KERATITIS

August J. Pacini, San Pedro, Calif., assignor to Purex Corporation Ltd., Lakewood, Calif.

No Drawing. Original application Mar. 22, 1968. Ser. No. 715,167. Divided and this application Jan. 22, 1970, Ser. No. 10,680

Int. Cl. A61k *27/00*

U.S. Cl. 424—295 **2 Claims**

The cobalt salt of trans-dodecenedioic acid has been prepared and found to be a highly effective vulnerary agent.

3,720,774

METHOD OF TREATING PAIN, FEVER OR INFLAMMATION

Karl Peister, Westfield, Meyer Sletzinger, North Plainfield, and David F. Hinkley, Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Apr. 7, 1970, Ser. No. 26,438. Divided and this application July 20, 1971, Ser. No. 164,448

Int. Cl. A61k *27/00*

U.S. Cl. 424—303 **1 Claim**

New acyloxyalkyl esters of indenyl acetic acids. These compounds are useful as in vivo cleavable, long-lasting anti-inflammatory and analgesic agents. Also included are processes for preparing these compounds.

This is a division of co-pending application Ser. No. 26,438, filed Apr. 7, 1970, now abandoned.

3,720,775

TREATMENT OF A PATHOLOGICAL FIBRINOLYTIC STATE IN PATIENTS

Larry J. Loeffler, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application June 13, 1969, Ser. No. 833,161, now Patent No. 3,634,499, which is a continuation-in-part of abandoned application Ser. No. 690,404, Dec. 14, 1967. Divided and this application June 25, 1971, Ser. No. 157,035

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **7 Claims**

The compounds 4-aminomethylbicyclo-[2.2.1]-heptane-1-carboxylic acid, 4-aminomethylbicyclo-[2.2.2]-octane-1-carboxylic acid, 5-aminomethylbicyclo-[3.2.2]-nonane-1-carboxylic acid and the corresponding 2,5 and 6,8-diketo compound respectively are useful in anti-fibrinolytic compounds.

ELECTRICAL

3,720,776
KEYBOARD TRIGGERED PERCUSSION SOUND PRODUCING DEVICE FOR KEYBOARD ELECTRONIC MUSICAL INSTRUMENT

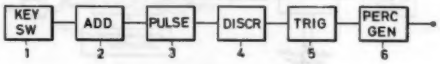
Takeshi Adachi, and Syoichi Suzuki, both of Hammamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hammamatsu-shi, Japan

Continuation of Ser. No. 859,878, Sept. 22, 1969, abandoned. This application Aug. 9, 1971, Ser. No. 170,359

Claims priority, application Japan, Sept. 25, 1968, 43/83144; Oct. 25, 1968, 43/78073

Int. Cl. G10h *1/00*

U.S. Cl. 84—1.13 **7 Claims**



In an electronic organ including tone generators, key switches associated with playing keys in the keyboard for respectively switching signals from the tone generators, and a mixing circuit for mixing the switched signals; a percussion sound producing device comprises a depressed-key number detecting circuitry for generating a D.C. voltage responsive to the number of simultaneously depressed keys in the keyboard, a trigger signal generating circuitry fed with the D.C. voltage and generating a trigger signal when the D.C. voltage exceeds a predetermined value, and a percussion sound signal generator for generating percussion sound signals triggered by the trigger signal. In an electronic organ, for example, when two or more keys in the keyboard are depressed concurrently, there is produced maracas sound in addition to the musical-scale sounds; but when only one key is depressed at a time, there is produced only a musical-scale sound but no maracas sound.

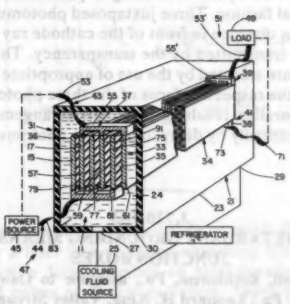
3,720,777
LOW LOSS CONDUCTOR FOR A.C. OR D.C. POWER TRANSMISSION

William Boyd Sampson, Bellport, and Meyer Garber, Patchogue, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 25, 1971, Ser. No. 174,745

Int. Cl. H01v *11/00*

U.S. Cl. 174—15 C **2 Claims**



Compact, easy to fabricate, noninductive, low surface magnetic field superconductor transmission line that has minimal stray fields.

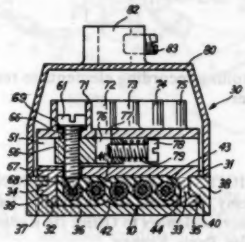
3,720,778
ELECTRIC RIBBON CABLE AND CONNECTOR ASSEMBLY

Hans Woertz, Basel, and Oskar Woertz, Riehen, both of Switzerland, assignors to Oskar Woertz, Inh. H. & O., Woertz, Basel, Switzerland

Filed March 28, 1972, Ser. No. 238,781

Int. Cl. H01r *13/46*

U.S. Cl. 174—59 **12 Claims**



An electrical ribbon cable having a plurality of conductors positioned substantially within the same plane is mounted within a connector housing to a plurality of connecting terminals by contact screws having pointed ends for puncturing the insulation surrounding the ribbon cable to contact respective ones of the conductors. The flat surfaces of the ribbon cable include at least one longitudinal groove and a recess is formed in the connector housing conforming to the cross section of the ribbon cable and has at least one projection engaging with the longitudinal groove on the ribbon cable to predetermine the alignment of the conductors with the connecting terminals. The connector housing is provided with an insulating support forming the recess and a removable cover; the insulating support includes rib members and the cover has recesses aligned with the rib members so that the cover is mounted in only one predetermined position. The cover has passages through which external conductors are attached to the respective connecting terminals.

3,720,779
METHOD AND APPARATUS FOR TRANSLATING COLOR INFORMATION OF A PATTERN INTO RECORDINGS

Johannes Schunack, Berlin-Lichterfelde, Germany, assignor to Franz Morat GmbH, Stuttgart-Vaihingen, Germany

Continuation of Ser. No. 878,996, Dec. 5, 1969, abandoned, which is a continuation of Ser. No. 601,204, Dec. 12, 1966, abandoned. This application March 9, 1971, Ser. No. 122,487

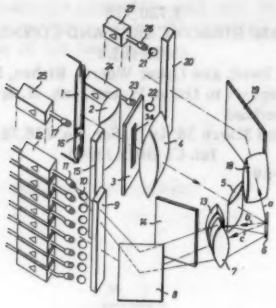
Claims priority, application Germany, Dec. 15, 1965, M 67647; Oct. 19, 1966, M 71331

Int. Cl. H04n *9/02*

U.S. Cl. 178—5.2 R **14 Claims**

The differently colored areas of a sample pattern are automatically translated into control impulses which represent

color and position of the areas of the sample pattern and are



used for controlling recording elements to record on tracks of a record carrier.

3,720,780

PCM DIGITAL COLOR TELEVISION SYSTEM

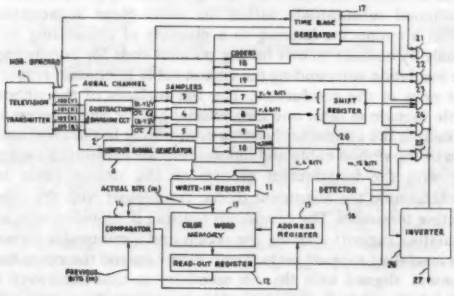
Maurice A. Remy, Clamart, and Daniel M. Tartary, Versailles, both of France, assignors to Office De Radiodiffusion-Television Francaise, Paris, France

Filed Aug. 30, 1971, Ser. No. 176,195

Claims priority, application France, Aug. 31, 1970, 7031704

Int. Cl. H04n *9/40*

U.S. Cl. 178—5.2 R **5 Claims**



Digital PCM coded color television system in which the image is transmitted at a rate of two bits per image point. The luminance is transmitted by a word of *p* bits every p/2 points and the luminance increments corresponding to the "image contour points" are transmitted by two bits. Color words which are formed of samples of two color components of the image are stored in color transmit storing means and the addresses of the color words in said storing means are transmitted in lieu of the color words themselves. A receive storing means is provided at the receiver station and it is updated from the transmit storing means during the line blanking periods.

3,720,781

HIGH VOLTAGE SLEWING OF PENETRATION TUBE GUN

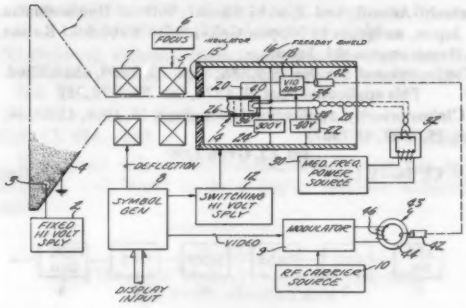
Roger F. West, Weston, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 10, 1971, Ser. No. 197,467

Int. Cl. H04n *9/22;* **H01j** *1/52;* **H04b** *1/08*

U.S. Cl. 178—5.4 PE **6 Claims**

The electron gun of a multiple penetration type cathode ray tube is completely surrounded by a shield which houses circuitry for operating the gun with potentials referenced to the shield. The circuitry is coupled through high voltage isolation to external circuitry such as power sources and a source of video. The anode of the CRT is



maintained at a constant high voltage potential, whereas the shield and the gun are slewed many kilovolts between high voltages so as to provide variable to penetration of the CRT beam in order to excite selected phosphors.

3,720,782

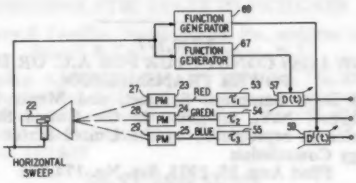
LENSLESS FLYING-SPOT SCANNER FOR GENERATING COLOR SIGNALS

William Kaminski, West Portal, and Herwig Werner Kogelnik, Fair Haven, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1971, Ser. No. 209,530

Int. Cl. H04n *9/04*

U.S. Cl. 178—5.4 R **7 Claims**



A color transparency is placed on the face of a flying-spot scanning cathode ray tube whose light spot is raster scanned in a conventional fashion. Three juxtaposed photomultipliers are placed a given distance in front of the cathode ray tube to collect the light transmitted by the transparency. Three primary color signals are selected by the use of appropriate color filters which cover the respective faces of the three photomultipliers. The image parallax resulting from this arrangement is compensated electrically by delay lines at the photomultiplier outputs.

3,720,783

FIRE RETARDANT GROUNDING MEANS FOR JUNCTION BOXES

Oswin C. Moll, Bethlehem, Pa., assignor to Oswin C. Moll, Bethlehem, Pa.; Leonard H. King, Valley Stream and Campani, Northport, N.Y.

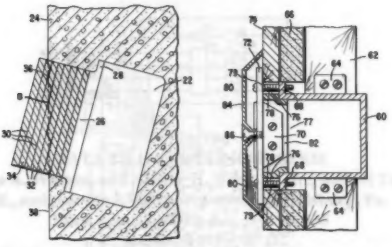
Filed Nov. 26, 1971, Ser. No. 202,324

Int. Cl. H02g *3/12*

U.S. Cl. 174—51 **18 Claims**

An electrical receptacle or the like is grounded directly and positively by means of a screw extending through axially shor-

tenable spacer means positioned between the metallic frame of the receptacle and a portion of the metallic junction box on which it is mounted. The junction box is also provided with a cover member having a tubular collar whose length can be reduced as required in order to provide a plane that is substantially flush with a finished wall surface. The collar portion pro-



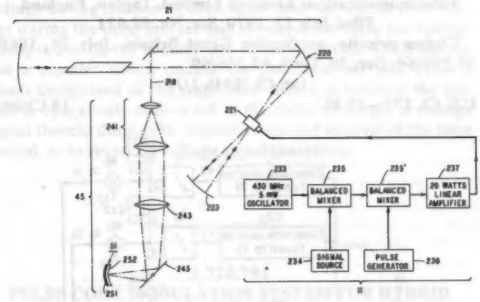
vides a fire retardant enclosure about the electrical receptacle and junction box opening. In an alternate embodiment the collar portion is used to provide a fire retardant grounding means for a previously installed junction box when paneling or the like is added to the wall structure introducing an air gap between the electrical receptacle and the junction box.

3,720,784

RECORDING AND DISPLAY METHOD AND APPARATUS

Dan Maydan; Melvin Irwin Cohen, both of Berkeley Heights, and Robert Eugene Kerwin, Westfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 12, 1971, Ser. No. 115,029
Int. Cl. G11b *7/00, 11/02*
U.S. Cl. 178—6.6 R **25 Claims**



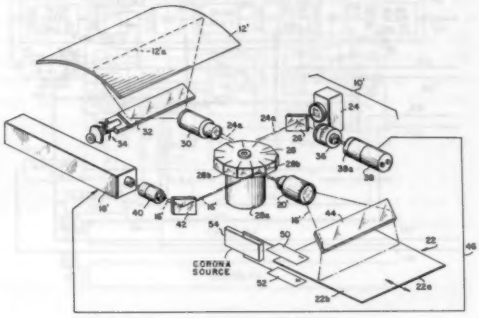
An image comprising a multitude of small discrete holes is formed by a laser in a radiation absorbing film. Appropriate means form a large number of brief-duration, amplitude-modulated pulses of optical radiation. These pulses are then deflected and focused to form an array of discrete holes in a film, such as a 500 Angstrom thick layer of bismuth, on a polyester substrate. By varying the energy in each pulse, the size of the holes can be varied to form images having a gray scale.

3,720,785

RECORDING SYSTEM AND METHOD FOR COPYING MACHINE

John A. Van Auken, Miami Beach, Fla., assignor to Saxon Industries, Inc., New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,838
Int. Cl. G03g *15/04, 15/10, 15/16*
U.S. Cl. 178—6.6 A **9 Claims**



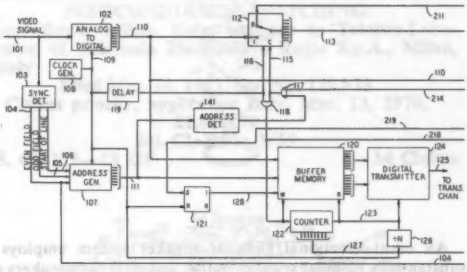
A high density, high repetition rate recording system including a laser, a high DC voltage supply, and a recording medium. The system further includes modulation and/or directional-controlling means for controlling the laser output in response to signals received from an intelligence-bearing original. The recording medium, upon which the intelligence of the original is received, is described to be an electrostatic copying machine paper having a substrate and a conductive coating. The method of the present invention includes the steps of vaporizing the coating in selected areas by use of a controlled laser beam, applying a corona charge to the recording medium such that the medium is rendered charged and toner-receptive only in the areas vaporized by the laser beam and applying toner to the recording medium.

3,720,786

CONDITIONAL REPLENISHMENT VIDEO ENCODER WITH PREDICTIVE UPDATING

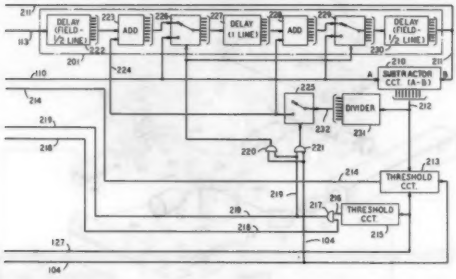
Cassius Chapin Cutler, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed , Ser. No. 144,761
Int. Cl. H04n *7/12*
U.S. Cl. 178—7.1 **15 Claims**



Each new sample from a video signal is compared with a sample derived from a frame memory having the same spatial point location in the video frame. If a significant difference exists, the new sample replaces the old sample in the frame memory and is stored in a buffer memory. The frame memory is composed of three delay lines connected in tandem having delay values such that the samples preceding and following the

center delay line correspond to spatial points above and below the sample being compared. If a significant difference exists and if the buffer memory is filled to a predetermined level, the samples preceding and following the center delay line are also predictively updated with values derived from the value of the



new sample. Different functions are used to predictively update during the even and odd fields and greater differences are required to exist before they are deemed to be significant during the even fields in order to avoid the creation of an unstable condition.

3,720,787

OMNI-DIRECTIONAL GLOBULAR SPEAKER SYSTEM

Yoshikazu Ishii, Fujisawa; Masamichi Hayashi, Sagamihara, and Shunichi Tanaka, Komae, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed March 24, 1971, Ser. No. 127,516

Claims priority, application Japan, March 28, 1972, 45/29654

Int. Cl. G10k *13/00*

U.S. Cl. 179—1 E **4 Claims**

An omni-directional globular speaker system employs a substantially globular speaker baffle, a plurality of speakers attached to an entire peripheral surface of the speaker baffle, and means for variably adjusting the audio output of a preferred speaker out of a plurality of speakers. The directivity characteristic of the globular speaker system is omni-directional and of a spherical form when the adjusting means is not yet variably adjusted. The variable adjusting means adjusts the directivity characteristic so that the speaker system will have a specified directivity characteristic of a non-spherical form.

3,720,788

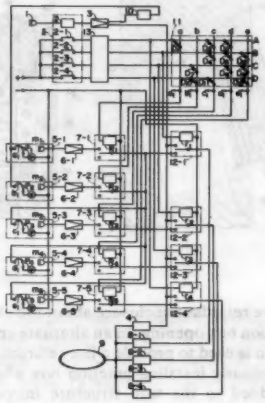
SIMULTANEOUS LANGUAGE TRANSLATION SYSTEM

Hideaki Hashimoto, Nakano-ku, Tokyo, Japan, assignor to Kabushiki Kaisha Prince Hotel, Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,257

Int. Cl. H04b *5/00*

U.S. Cl. 179—1 B **2 Claims**



A simultaneous translation system used to enable interpretation from the language of a speaker into several different languages. A switching system and matrix circuit are used to connect the speaker to appropriate interpretation booths thereby enabling an interpreter to translate the speaker's language into the different appropriate language and a circuit for transmitting the speaker's language and the language of each active interpreter to a conference audience.

3,720,789

ELECTRICAL SIGNALLING SYSTEMS USING CORRELATION DETECTORS

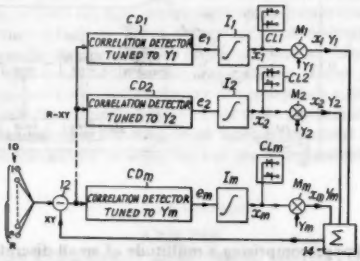
Adrian Percy Clark, Taplow, England, assignor to Plessey Telecommunications Research Limited, Taplow, England

Filed July 27, 1970, Ser. No. 58,621

Claims priority, application Great Britain, July 28, 1969, 37,750/69; Dec. 30, 1969, 63,366/69

Int. Cl. H04b *1/14*

U.S. Cl. 179—15 BC **19 Claims**



In an electrical signalling system the signals are arranged to be split up into signal groups, each of which contains a predetermined number of signal elements which are linearly independent with respect to each other at the transmitter, corresponding signal elements in successive groups being related to each other and forming a series of signal elements. A

receiver for such a system comprises either one correlation detector successively tuned to receive each series of signal elements or a plurality of correlation detectors each tuned to receive a respective series. Means responsive to the output of said correlation detector or detectors is arranged to produce a respective output signal for each series of signal elements.

3,720,790

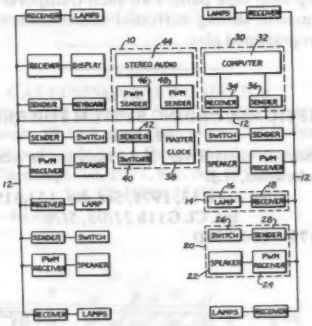
DATA TRANSMITTING SYSTEM

George A. Watson, and Arthur H. Hamond, Jr., both of Tustin, Calif., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 22, 1971, Ser. No. 96,335

Int. Cl. H04j *3/08*

U.S. Cl. 179—15 AL **17 Claims**



The specification discloses a two conductor data transmission system linking a plurality of sending stations to a plurality of receiving stations. A master clock connected to the cable determines consecutive time periods each consisting of three consecutive intervals. The master clock holds the cable at one voltage during the first of each three intervals and at zero voltage during the third thereof and monitors the cable for voltage changes during the second one of the intervals. Each station has a counter which counts the first intervals and when a count designated to the respective station is reached the station is operatively connected to the cable to supply a voltage signal thereto during the respective second interval of the time period, or to receive a voltage signal therefrom.

3,720,791

PULSE CODE MODULATION SYSTEM FOR HYBRID MULTIPLEX TRANSMISSION OF AUDIO AND DATA SIGNALS

Yutaka Yada, Tokyo; Tsukumo Higeta, Kawasaki-shi, and Shinichi Mitsui, Yokohama-shi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

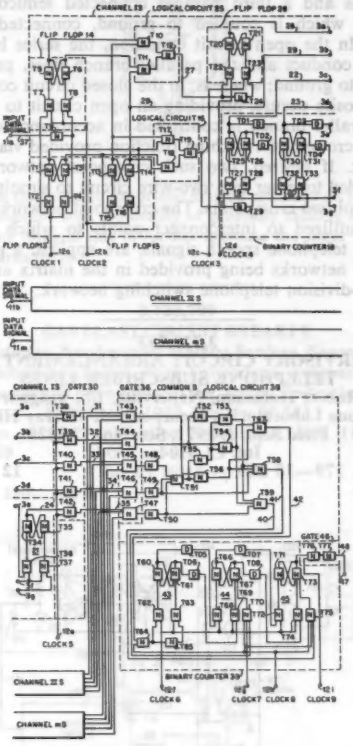
Filed March 29, 1968, Ser. No. 717,176

Claims priority, application Japan, March 31, 1967, 42/20518

Int. Cl. H04j *3/16*

U.S. Cl. 179—15 BM **3 Claims**

Clock signals divide asynchronous signals of two levels into equal time slots. The condition of the asynchronous signal is detected at a determined instant in a time slot so that it also determines a change in condition of the signal. The condition of the signal is indicated in a specific code indication depicting such condition and a change in condition of the signal is indicated in a different code indication depicting the instant of change of condition in a time slot. The code indications are transmitted mixed with PCM signals.



3,720,792

ELECTRONIC CROSSPOINT NETWORK WITH SEMICONDUCTOR SWITCHING

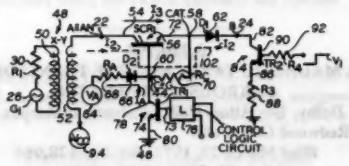
Albert Resta, Milan, Italy, assignor to Telettra-Laboratori di Telefonia Elettronia e Radio S.p.A., Milan, Italy

Filed Mar. 10, 1971, Ser. No. 122,978

Claims priority, application Italy, Mar. 13, 1970, 21,881/70

Int. Cl. H04q *3/50*

U.S. Cl. 179—18 GF **14 Claims**



A switching apparatus includes an electronic crosspoint network for providing full electronic connection or disconnection between at least two points whose intercon-

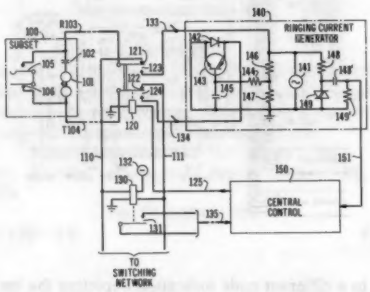
nection provides the particular crosspoint. The network has an open circuit condition, in which a very high OFF impedance is provided, and a closed circuit condition, in which a very low ON impedance is provided. The network includes at least two series connected semiconductor branches and a third parallel connected semiconductor branch, which is coupled to ground, connected in between. In the open circuit condition, the series branches do not conduct and the parallel branch does, providing a short to ground; whereas, in the closed circuit condition, the opposite occurs, providing an open circuit to ground. The parallel branch is controlled in accordance with the desired crosspoint switching function provided via a logic network. If desired, two such crosspoint networks may be coupled together in a two-wire circuit to simultaneously control two crosspoints. The crosspoint network is preferably utilized to interconnect points to which signals, such as telephone speech signals, are applied, a plurality of such networks being provided in the matrix arrays of a space-division telephone switching network.

3,720,793

SUPERVISORY CIRCUIT ARRANGEMENT FOR TELEPHONE SUBSCRIBER LINES

Henry Robert Hofmann, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 1, 1971, Ser. No. 176,828
Int. Cl. H04m *3/04*
U.S. Cl. 179—18 HB **12 Claims**



A telephone subscriber supervisory circuit in which a line off-hook condition can be detected during one of periodic reductions in power in the applied ringing current during the typical two-second ringing interval. The ringing current consists of a modified sine-wave having its positive alternations clipped at the leading edge to the zero axis of the wave for a predetermined interval. During this interval the line relay is actuated to connect supervisory direct current to the line for testing for the off-hook condition. The short interruptions in ringing current are inaudible to subscribers.

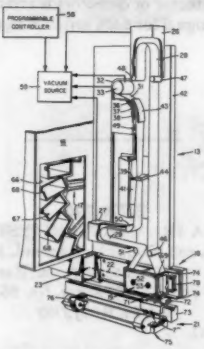
3,720,794

DUAL MAGNETIC TAPE CASSETTE TRANSPORT AND CARROUSEL APPARATUS

Dale P. Dolby, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed March 29, 1971, Ser. No. 128,966
Int. Cl. G11b *15/38, 15/56*
U.S. Cl. 179—100.2 PM **16 Claims**

A self-threading transport employs vacuum to pull supply and takeup loops of tape from the side of a tape cassette. A third intermediate loop is also pulled, within which is positioned a retractable vacuum capstan, and the tape is at the same time engaged with rotary video and longitudinal audio heads. For rewind, the capstan is retracted and the takeup



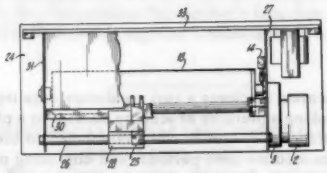
loop alone is maintained, the heads being spaced away from the takeup loop tape path. Two such transports are provided with a cassette storing carrousel therebetween for uninterrupted programmed play.

3,720,795

MAGNETIC RECORDING SYSTEM FOR REPERTORY DIALER

John N. Silsby, Toms River, N.J., assignor to Acron Corporation, Lakewood, N.J.

Filed April 13, 1971, Ser. No. 133,619
Int. Cl. G11b *21/08, 5/76*
U.S. Cl. 179—100.2 MD **4 Claims**



The specification describes a maghetic recording system for use in a repertory dialer. A frame is employed for supporting a rotatable cylinder having magnetic material affixed thereto. Support for the magnetic read/record head is provided by a rod and a notched rail, which slidably mounts a block formed of a plastic material. The block supports a first spring biased member which carries the magnetic head and a second pivotally mounted spring biased plate having a portion for engaging the notched rail. Depression of a rod against the bias of the spring on the plate causes a portion of the plate to disengage the notched rail thereby permitting the block to be slidably moved along the rod until a new position is established. The rod is disengaged from the plate and engagement of the entire assembly in the notched rail is then accomplished.

3,720,796

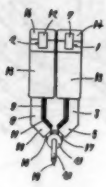
MULTICHANNEL PICKUP CARTRIDGE

Kimiyasu Honma, Tokyo, Japan, assignor to Kabushiki Kaisha Audio-Technica, Tokyo, Japan

Continuation-in-part of Ser. No. 737,998, June 18, 1968, abandoned. This application Aug. 4, 1971, Ser. No. 169,039
Claims priority, application Japan, June 20, 1967, 42/53200
Int. Cl. H04r *11/12*
U.S. Cl. 179—100.41 K **9 Claims**

A multichannel pickup cartridge is provided with a cantilever arm having a stylus tip attached to one end thereof and a

pair of magnet armatures attached to the other end thereof so as to extend in a plane perpendicular to the axis of the arm and in a configuration corresponding to the both modulated walls of a groove on a record disk. Each armature is associated with a magnetic gap formed by a pair of pole pieces which are part



of an electromagnetic transducer. A suspension rod is fixed at one end to the other end of the cantilever arm and secured at the other end, under tension, to a cartridge housing to provide a tensioned support to the arm. The rod has flexibility to permit the angular movement of the cantilever arm.

3,720,797

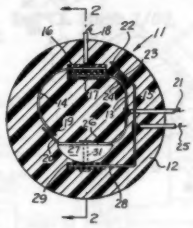
GAS FUSING SENSING DEVICE

Kenneth C. Gunn, 60 Hubbard St., Concord, Mass.; Stephen M. McDonagh, 98 Oak Ave., Riverside, and Robert Rosenholm, 42 Woodward Ave., East Providence, both of R.I.

Filed Sept. 10, 1971, Ser. No. 179,302

Int. Cl. H01h *35/00*

U.S. Cl. 200—61.08 **9 Claims**



A cut-off and alarm system for detecting the presence of gasoline or similar hydrocarbon liquid in water. The system employs a sensing switch consisting of a mass of material soluble in the gasoline or similar hydrocarbon liquid. Switch contact elements embedded in the mass are biased to move to an alarm state when the material dissolves. When the material dissolves, the associated load device is thereby disconnected from its power source and an alarm device becomes energized.

3,720,798

VACUUM-TYPE CURRENT INTERRUPTER

Sukeaki Kabayama; Masahiro Kume, both of Osaka; Akira Katou, Kyoto; Susumu Yamada, Kyoto, and Masayuki Isei, Kyoto, all of Japan, assignors to Sumitomo Electric Industry Company Ltd., Osaka and Nissin Electric Company, Ltd., Kyoto, Japan

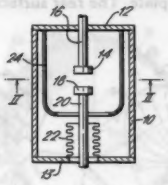
Filed Sept. 3, 1970, Ser. No. 69,265

Claims priority, application Japan, Sept. 8, 1969, 44/71090

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **9 Claims**

Vacuum-type current interrupter having a shield surrounding the contacts so as to block and condense the metallic vapor generated by arcing between the contacts upon separation thereof. The shield is made of partially sintered metallic material to increase the effective surface area to catch and



condense the metallic vapor and may be provided on the inner surface thereof with a plurality of generally radially inwardly projecting integral fins to further increase the inner working surface area thereof.

3,720,799

GAS BLAST CIRCUIT BREAKER

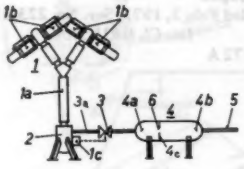
Adolf Eidinger, Nussbaumen; Mathias Sanders, Neuenhof, and Jost Schnieder, Baden, all of Switzerland, assignors to Aktiengesellschaft Brown, Boveri Cie, Baden, Switzerland

Filed Dec. 7, 1970, Ser. No. 95,553

Claims priority, application Switzerland, Dec. 11, 1969, 18421/69

Int. Cl. H01h *33/54*

U.S. Cl. 200—148 R **5 Claims**



In an electrical power circuit breaker of the gas blast type the switch contacts are subjected to a blast of pressurized gas in order to facilitate extinction of the arc when the contacts disengage under load. The pressure of the gas at the contacts is temporarily increased above the normal operating pressure by supplying additional gas to the switch contact chamber at a higher pressure from two serially connected storage chambers having unequal volumetric capacities in which the gas is stored and which communicate with each other through a constrictor. The larger of the two chambers is connected to a source of the higher pressure gas and the smaller chamber is connected to the circuit breaker for flow to the contact chamber by a pipe line which includes a controllable valve having a flow cross-section greater than that of the flow restrictor which interconnects the higher pressure gas storage chambers. This valve is opened for a brief period, e.g. about 50 milli-seconds when the switch contacts are opened.

3,720,800

UNIVERSAL SWITCH PLATE INDICATING ASSEMBLY

Edward S. Arnold, Oshawa, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

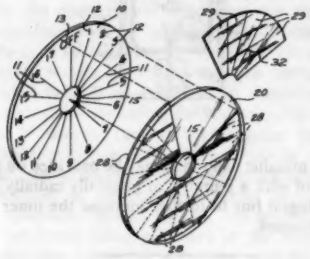
Filed May 11, 1972, Ser. No. 252,215

Int. Cl. H01h *9/16*

U.S. Cl. 200—167 R **7 Claims**

Each rotary switch plate assembly consists of a circular base plate, with central perforation for the switch shaft and bush-

ing. The base plate is marked with radiated lines representing the full number of angular switch steps in 360° of switching operation. A circular face plate of transparent plastic and of the same dimensions as the base plate is fastened to the external face of the base plate. The rear surface of the face plate is



furnished covered by removable opaque segments of adhesive backed plastic film. The segments of opaque film, representing the actual switch steps employed in a given installation, are removed from the back of the face plate to give visibility to the markings of the base plate governing the segments of operation of the rotary switch of the installation.

3,720,801

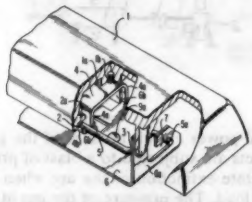
SPACE KEY

Makoto Yanaga, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1972, Ser. No. 223,217

Int. Cl. H01h *3/04*

U.S. Cl. 200—172 A **5 Claims**



A space key includes an elongated upper cover adapted to be touched with fingers, a lower guide plate and a spring disposed between the cover and the guide plate. A stabilizer rod having a center stem portion is rotatably received by the cover and Z-shaped end portions each pointed end of which is pivotably received in a corresponding notch formed in upright portions of the guide plate, whereby upon depressing the upper cover at any portion thereof the cover moves down without inclination toward the guide plate to reliably actuate a switch disposed under the guide plate.

3,720,802

SWITCH ACTUATION WITH LEVER ACTION

Hubert Fischer, Munich, Germany, assignor to Schaltbau Gesellschaft mit beschranker Haftung, Munich, Germany

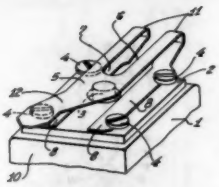
Filed June 7, 1972, Ser. No. 260,426

Claims priority, application Germany, June 8, 1971, P 21 28 322.7

Int. Cl. H01h *3/04*

U.S. Cl. 200—172 A **4 Claims**

In a combination of a switch and an operating plunger and of an actuator lever for the plunger, wherein the lever is constructed from a springy strip with a U-shaped recess in one end; the resulting legs of the U are bent back and clamped in-between holder elements on the switch casing from any of four different directions. The other end of the strip is provided for



engaging an external actuator for deflection of the strip as a whole with the point of bending of the legs serving as fulcrum. The legs together have width smaller than the width of the strip on the other side of the switch plunger.

3,720,803

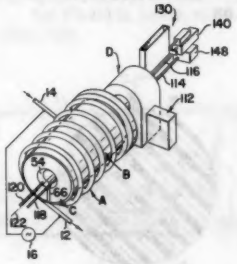
METHOD AND APPARATUS FOR INDUCTIVELY HEAT TREATING ELONGATED WORKPIECES

John C. Lewis, Hamilton, Wentworth, Ontario, Canada, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed June 2, 1972, Ser. No. 259,087

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.69 **24 Claims**



A method and apparatus for inductively heating and quenching elongated workpieces wherein the workpieces are longitudinally conveyed along a workpiece pass. The induction heating inductor is positioned within an elongated generally cylindrical transformer secondary winding which is positioned to surround the workpiece pass. During energization of the transformer for resultant energization of the inductor, at least the transformer secondary winding and inductor are continuously rotated about their longitudinal axes, while the workpieces are conveyed along the workpiece pass, to assure even heating of the workpieces. Means are provided adjacent the transformer secondary winding for cooling the secondary and adjacent the inductor for quenching the workpiece immediately following heating.

3,720,804

THREE-D ELECTRODE MACHINING TOOL

Ferdinand J. Kriz, Fairfield, Conn., assignor to The Producto Machine Company, Bridgeport, Conn.

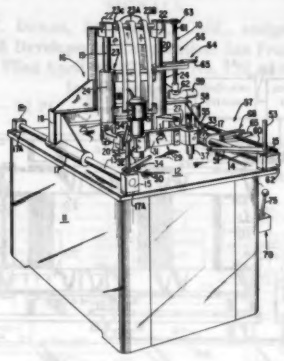
Continuation of abandoned application Ser. No. 47,280, June 18, 1970. This application Dec. 23, 1971, Ser. No. 211,745

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 V **10 Claims**

A contour-following apparatus has a first frame which is movable horizontally, a second frame movable vertically

on the first frame, and a third frame attached to the second frame and pivotally movable in a horizontal plane.



A tracer and a cutter are mounted on the third frame with each being individually pivotably adjustable.

3,720,805

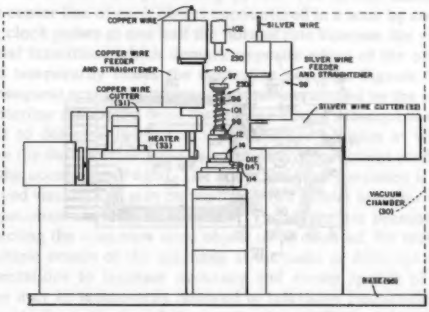
APPARATUS FOR THE MANUFACTURE OF COMPOSITE ELECTRICAL CONTACTS

William M. B. Fitzgerald, Toronto, Ontario, Canada, assignor to Johnson Matthey and Mallory, Ltd., Toronto, Ontario, Canada

Application Dec. 26, 1968, Ser. No. 786,971, now Patent No. 3,634,934, which is a continuation-in-part of abandoned application Ser. No. 507,173, Nov. 10, 1965. Divided and this application Nov. 4, 1971, Ser. No. 86,934

Int. Cl. H05b *1/00*

U.S. Cl. 219—152 **62 Claims**



A welded composite formed by cutting and heating continuous lengths of wire and immediately transferring the lengths to a die where the lengths are joined by pressing at high pressure and the joined lengths are then forced at least a portion of the way out of the die where heading operations are performed.

3,720,806

OPTICAL DEVELOPMENT APPARATUS

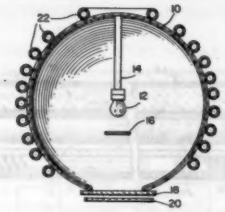
Richard A. Fotland, Warrensville Heights, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

Filed June 18, 1971, Ser. No. 154,552

Int. Cl. H05b *11/00*

U.S. Cl. 219—216 **5 Claims**

An apparatus for optical development of very faint or invisible latent images which provides a high level of intensity of radiation uniformly distributed over the optical development



area, and having a high collection efficiency from a radiation source.

3,720,807

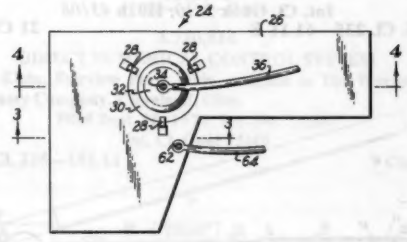
FOOD WARMING APPARATUS

Youn H. Ting, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 1, 1972, Ser. No. 248,827

Int. Cl. F27d *11/02*

U.S. Cl. 219—441 **12 Claims**



A food warmer comprising a tray portion having several compartments mounts a heater assembly in heat transfer relationship with some but not necessarily all the compartments. The heater assembly comprises a heat transfer plate of thermally and electrically conductive material to which is secured a wafer of positive temperature coefficient of resistance material. The wafer is provided with an electrically conductive coating on its two opposite faces. An electrically conductive spring is mounted by an eyelet on a saucer-like cover of electrically insulative material. The spring is biased into electrical contact with the wafer with the cover clamped in place on the heat transfer plate by a plurality of tabs. Electrical connection is made to the heat transfer plate and to the eyelet to provide a current path through the wafer. A ring of heat shrinkable material is shrunk around the periphery of the wafer to increase the effective electrical distance between the two faces of the wafer.

3,720,808

CERAMIC CORE LAMINATING ROLL

Neal J. Morrissey, Chicago, Ill., assignor to General Binding Corporation, Northbrook, Ill.

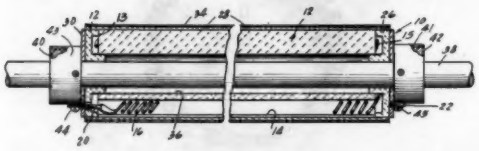
Filed Nov. 8, 1971, Ser. No. 196,384

Int. Cl. H05b *1/02*

U.S. Cl. 219—469 **11 Claims**

This invention provides a laminating roll for laminating thermoplastics and the like. The laminating roll comprises an

extruded ceramic or pressed cylindrical core, a series of equally spaced holes extending longitudinally through the core, the holes being positioned near the outer periphery of the ceramic core, a helically wound electrical resistance heating coil extending from one end of the core, the holes being arranged so the heating coil can be inserted in the holes only at their ends, and a highly conductive metal tubing surrounding and contacting the core.

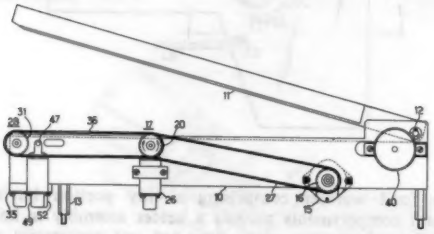


3,720,809

APPARATUS FOR READING RECORD CARDS

Jacob Peter Pot, Amsterdam, Netherlands, assignor to Bull General Electric (Nederland) N.V., Amsterdam, Netherlands

Continuation of application Ser. No. 796,320, Jan. 31, 1969. This application Oct. 16, 1970, Ser. No. 81,552
Claims priority, application Netherlands, Feb. 12, 1968, 6801931
Int. Cl. G06k *7/10;* **H01h** *43/08*
U.S. Cl. 235—61.11 E **21 Claims**



An apparatus for reading punched cards co-operating with a control arrangement and provided with a synchronous motor having two directions of rotation adapted to drive rollers for advancing a card, either for the complete introduction of a card or for its ejection, with a step-by-step motor having two directions of rotation which is adapted to drive a conveyor band guiding an introduced card, the said band being supported by two rolls, one of which is retractable during the introduction and the ejection of a card. Logical circuits control the feeding of a number of actuating electromagnets of the sychronous motor and of the step-by-step motor, whereby a card is advanced columnwise in the forward direction and in the rearward direction as a result of pulses supplied by the control arrangement, which finally provides an ejection control pulse.

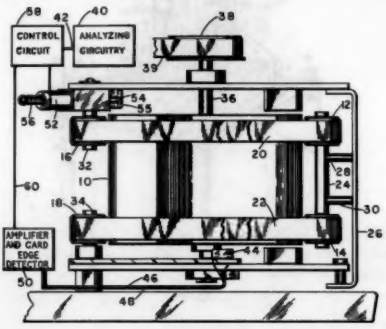
3,720,810

CARD MARKING APPARATUS

Ralph H. Schultz, Norristown, Pa., assignor to Peripheral Sciences, Inc., Norristown, Pa.

Filed Mar. 5, 1971, Ser. No. 121,417
Int. Cl. G06b *7/02;* **G06k** *1/12, 15/18*
U.S. Cl. 235—61.11 R **8 Claims**

Apparatus for deforming selected data processing cards so that these cards are readily distinguishable from other cards. A marking device, movable into and out from a path along which a series of cards is moved, is selectively actuated to move into the path of the cards to engage selected cards to bend these cards as they move past the marking device.

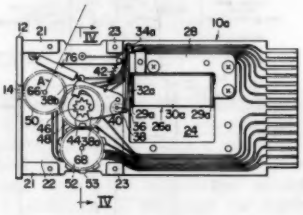


3,720,811

ELECTROMAGNETIC COUNTERS

Tohru Takeda, Tokyo, Japan, assignor to Tamura Electric Works Limited, Tokyo, Japan

Filed Aug. 12, 1970, Ser. No. 63,067
Claims priority, application Japan, Aug. 13, 1969, 44/63,747
Int. Cl. G06n *1/02*
U.S. Cl. 235—92 C **3 Claims**

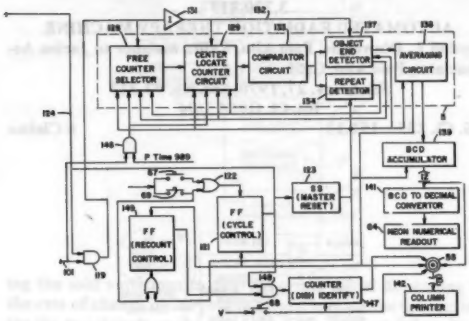


In an electromagnetic counter comprising an electromagnet connected to a source of input pulses, an intermittent advance mechanism driven by the electromagnet, a stepping mechanism including electrical read out means and driven by the intermittent advance mechanism, and a digit wheel stepping with the stepping mechanism to visually display the number of input pulses applied to the electromagnet, there are provided a reed switch disposed closely adjacent the digit wheel and a permanent magnet in the digit wheel to operate the reed switch by the rotation of the digit wheel to provide an output pulse. Where a pair of unit electromagnetic counters are juxtaposed in a pair the electromagnet of each unit is partially disposed in the casing of each unit and partially protrudes from the casing and the two units are combined such that the protruding portion of the electromagnet of one unit is received in the casing of the other.

3,720,812
METHOD AND APPARATUS FOR DETECTING AND COUNTING OBJECTS BY TRANSLATION OF VIDEO SIGNALS

Raymond F. Downs, Pleasanton, Calif., assignor to DHM Research & Development Corporation, San Francisco, Calif.

Filed April 9, 1971, Ser. No. 132,659
Int. Cl. G06m *11/04*
U.S. Cl. 235—92 PC **13 Claims**



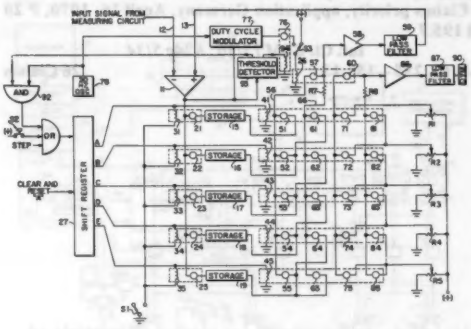
Optically distinguishable objects in a specimen area, such as bacteria colonies cultured on a petri dish, are scanned by a vidicon tube which transmits a video signal to a data processing circuit for detecting and counting objects including overlapping objects. Horizontal and vertical sweeps of the tube are controlled by the video signal processing circuit clock at a rate slower than television sweep frequencies to provide broad bandwidth and to enable the use of low cost components in the data processing circuit. The circuit identifies the center line of each object encountered in a scan by counting clock pulses at one half the normal rate between the video signal transitions which demark opposite edges of the object and temporarily stores the centerline position. Signals from subsequent scans identifying an object intersected by the same centerline are erased from the storage until a subsequent scan fails to detect an object at the centerline position at which time the data is erased and an additional object count is added to the accumulated total. The count for each specimen is displayed visually and may be recorded by a printer together with a specimen identification number. Provisions are present for selecting the minimum sized object to be counted, for making multiple counts of the specimen at the same or different scan orientations to increase accuracy and sweep speeds of the tube may be temporarily restored to television frequencies to provide for a display of the specimen on a TV moniter. The apparatus has provisions for avoiding false counts from objects outside the area of interest and may be coupled to a general purpose computer or compact special purpose computer components for further analysis of object parameters, such as size, growth and the like.

3,720,813
INTERPOLATIVE READOUT APPARATUS

Rosario S. Badessa, Dedham, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Continuation-in-part of Ser. No. 105,878, Jan. 12, 1971. This application Aug. 23, 1971, Ser. No. 173,790
Int. Cl. G06g *7/30*; G12b *13/00*
U.S. Cl. 235—151.3 **15 Claims**

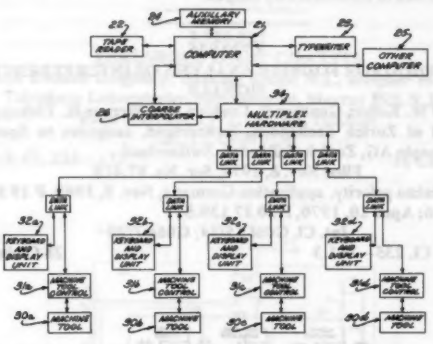
In the readout apparatus disclosed herein, the output signal level of a measuring circuit is, by interpolation, located or determined in relation to a pair of stored calibration voltage levels. The stored calibration voltage levels in turn correspond to measuring circuit output levels previously obtained in response to respective calibration samples applied to the same measuring circuit. The same interpolation process is simultaneously applied to position or derive a readout signal in relation to a pair of preselectable reference signals, the reference signal levels being preselected to correspond with the calibration samples which were previously used to establish the stored calibration signal levels.



3,720,814
DIRECT NUMERICAL CONTROL SYSTEM

John Klein, Fairview Park, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Sept. 18, 1970, Ser. No. 73,567
Int. Cl. Go6f *15/46*
U.S. Cl. 235—151.11 **9 Claims**

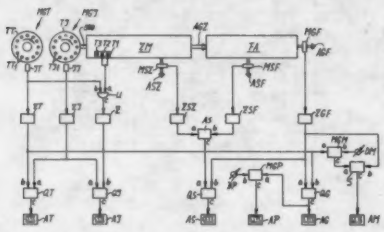


A control system for a plurality of numerically controlled machine tools having a coarse interpolator for generating from parametric data a plurality of signals defining the absolute magnitude of vector components along two orthogonal axes of a plurality of straight line segments closely approximating a mathematical curve defined by the parametric data. Multiplex hardware is provided for time-sharing the coarse interpolator among the plurality of machine tools, a digital computer supplies the coarse interpolator with the parametric data and acts as high-speed buffer storage to assist in time-sharing the coarse interpolator, and data link equipment is provided for transmitting signals between the controls of the plurality of the machine tools and the coarse interpolator or the computer.

3,720,815
APPARATUS FOR EVALUATING THE OUTPUT OF MACHINES FOR THE PRODUCTION AND/OR PROCESSING OF SMOKERS PRODUCTS

Heinz-Christen Lorenzen, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg-Bergedorf, Germany

Filed April 7, 1971, Ser. No. 131,960
Claims priority, application Germany, April 16, 1970, P 20 18 195.7
Int. Cl. G06f *15/36*; A24c *5/34*
U.S. Cl. 235—151.13 **26 Claims**

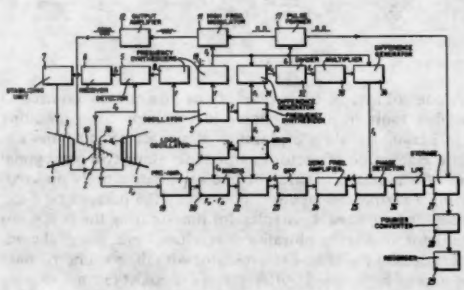


The output of a single machine or a group of cooperating machines for the production and/or processing of smokers' products is monitored by signal generating devices which determine the number of satisfactory and unsatisfactory products produced within a given period of time. The signals which are generated by such devices are fed into a system of calculating circuits which carry out automatic computing operations and feed information to recording devices which record the actual output at any particular stage of operation, the potential output within a given period of time, the output of satisfactory and unsatisfactory products and/or other data which can be evaluated to gain information concerning all phases of the output or lack of output and the probable cause or causes of unsatisfactory output.

3,720,816
METHOD FOR FOURIER ANALYSIS OF INTERFERENCE SIGNALS

Toni W. Keller; Gunther R. Laukien, and Werner H. Tschopp, all of Zurich Faellanden, Switzerland, assignors to Spectrospin AG, Zurich-Fallanden, Switzerland

Filed Nov. 6, 1970, Ser. No. 87,418
Claims priority, application Germany, Nov. 8, 1969, P 19 56 331.6; April 10, 1970, P 20 17 139.5
Int. Cl. G06f *15/34*; G06g *7/19*
U.S. Cl. 235—151.3 **28 Claims**

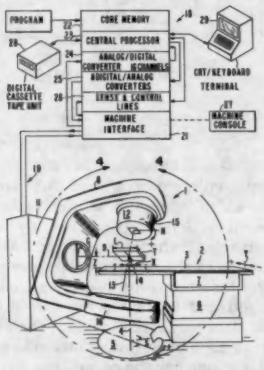


Interference signals such as those obtained in nuclear spin spectrometry are subjected to a Fourier analysis in which the frequencies and amplitudes of the interference signals are determined mathematically. The excitation of the sample produces interference signals, all the oscillations of a definite frequency band are filtered out, and the Fourier analysis is performed on this frequency band. The selected portion of the interference oscillations is varied by varying the frequency band and the center frequency thereof in reference to the frequency content of the whole interference signal. One frequency may be produced in a fundamental oscillator and various frequencies, for example for use in mixing circuits, are obtained by frequency multiplication and division.

3,720,817
AUTOMATED RADIATION THERAPY MACHINE

Kendall L. Dinwiddie, Palo Alto, Calif., assignor to Jarian Associates, Palo Alto, Calif.

Filed Nov. 27, 1970, Ser. No. 93,327
Int. Cl. G05d *3/04*
U.S. Cl. 235—151.11 **6 Claims**



A computer assisted radiation therapy machine is disclosed The machine includes a rotatable gantry having a radiation source portion and a beam stopping portion. The gantry is rotatable about a patient treatment couch which is rectilinearly translatable in three orthogonal directions as well as being rotatable about the vertical axis. A computer controls the operations of the machine to automatically set the position of the gantry relative to the couch for treatment of a patient. The automated motions of the gantry and the couch are simultaneous for decreasing the setup time. In addition, the computer includes a collision avoidance program which averts collision between the couch or patient, and the gantry.

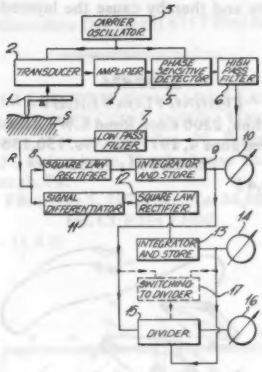
3,720,818
METHOD OF MEASUREMENT AND APPARATUS THEREFOR

Robert Claude Spragg, and David John Whitehouse, both of Leicester, England, assignors to The Rank Organization Limited, London, England

Filed Jan. 29, 1971, Ser. No. 111,070
Claims priority, application Great Britain, Jan. 30, 1970, 4,581/70
Int. Cl. G01b *7/34*
U.S. Cl. 235—151.32 **52 Claims**

Apparatus and method for determining a parameter which will effectively characterize the fluctuations of a dependent variable with respect to an independent variable, such as the height of a surface profile with respect to position along the

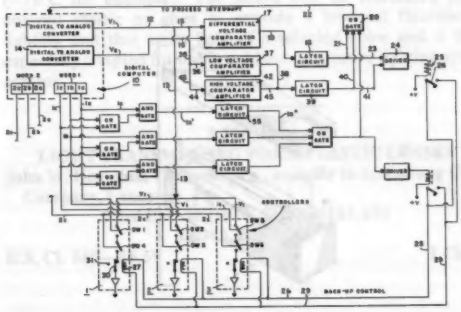
surface. The apparatus includes means for detecting the variations of the independent variable such as a transducer for detecting the variations of the height of the surface profile along a line in the surface to obtain a signal representing the said variations, and means for differentiating the signal representing the said variations to provide a rate signal depending on the rate of change of the profile height, and means for combining the two signals, such as by integrating each and then dividing one by the other, to provide the said parameter which characterizes the fluctuations.



3,720,819
DIRECT DIGITAL COMPUTER CONTROL ERROR DETECTOR SYSTEM

Cecil J. V. Newton, Baytown, Tex., and Ernest W. Harrison, Tripoli, Libya, assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 25,254, March 31, 1970. This application Nov. 26, 1971, Ser. No. 202,551
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 AE **9 Claims**

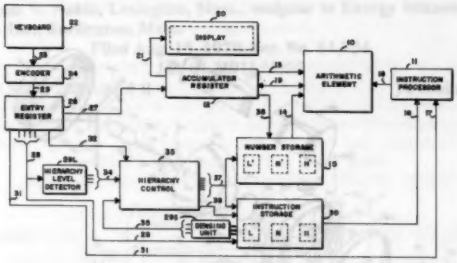


An error detection device for a direct digital process control computer detects at least two common computer output errors and immediately informs the computer and the operator of such error. The two types of errors are (a) a difference between two digital-to-analogue converter (DAC) outputs that is larger than a predetermined limit, and (2) two or more bits in an ECO word at the same time. Preferably it also detects (3) a DAC output that is less than a predetermined limit, and (4) a DAC output that is greater than a predetermined limit. On detecting an error, the device sends a process interrupt signal to the computer, switches the affected controller to backup controls, and operates an alarm to alert the operator.

3,720,820
CALCULATOR WITH A HIERARCHY CONTROL SYSTEM

Michael J. Cochran, Sunnyvale, Calif., assignor to Tektranex, Inc., Beaverton, Oreg.

Filed March 18, 1971, Ser. No. 125,511
Int. Cl. G06f *7/38*
U.S. Cl. 235—156 **20 Claims**

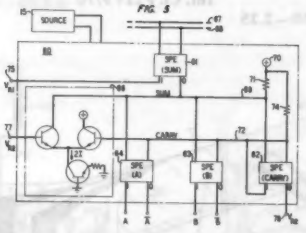


An electronic calculator in disclosed having a keyboard in which numbers and hierarchal mathematical instructions are entered to produce corresponding numerical and instruction signals to be operative to perform sequential calculations in accordance with mathematical rules of hierarchy. Instruction storage means are included with a plurality of storage sections, each storage section temporarily stores an instruction signal of a designated hierarchal level. Numerical storage means with a corresponding plurality of storage sections are also included to operate with the instruction storage means to temporarily store the numerical signals associated with the hierarchal mathematical instructions. A hierarchy control unit is provided to automatically transfer the contents of the instruction and numerical storage means to an arithmetic unit to enable sequential calculations to be performed in accordance with hierarchal rules of mathematics as each hierarchal instruction is entered in the calculator.

3,720,821
THRESHOLD LOGIC CIRCUITS

John Donnell Heightley, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 4, 1971, Ser. No. 120,834
Int. Cl. G06f *7/50*
U.S. Cl. 235—172 **16 Claims**



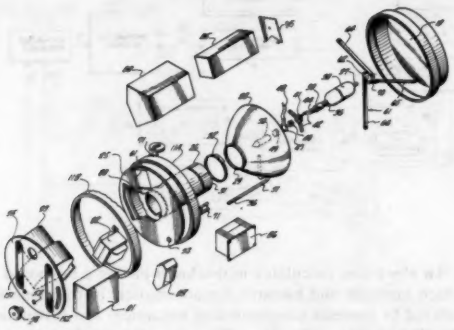
The invention is a threshold logic circuit including a pair of busses and a plurality of storage-processor elements connected to the busses. Each element is arranged to decide which one of a pair of double-rail input signals has a higher potential and to store the result of that decision. Information read out of storage directs a unit of current alternatively to one or the other of the two busses.

A threshold logic adder circuit and a threshold logic two's-complement circuit are included.

3,720,822
XENON PHOTOGRAPHY LIGHT

James R. Rochester, Chatsworth; Fenton D. Hamilton; Felipe Navarro, both of Los Angeles, and Neal R. McCurdy, Granada Hills, all of Calif., assignors to Xenotech, Inc., Irvine, Calif.

Filed Jan. 29, 1971, Ser. No. 110,832
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **14 Claims**

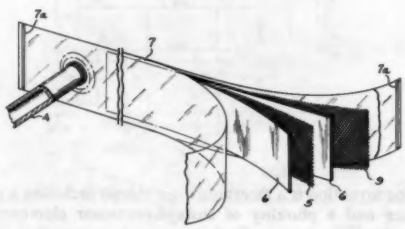


A D.C. cinematography light source of 85,000 lumens with a color temperature of approximately 6,000° Kelvin uses a xenon lamp mounted adjacent a ray collector so that collector and lamp are relatively movable to achieve focus. An air duct supports the lamp and an air blower discharges into the duct and about the lamp. A shroud at the front end of the lamp housing supports a light mixer or diffuser and directs exhaust air rearwardly, exteriorly of the housing. A central board in the housing supports air blowers and other electrical and electronic components away from the housing for efficient cooling air circulation to them and the ray collector. The ray collector has a reflective contour generated preferably by a modified skewed ellipse. The light mixer achieves controlled diffusion by means of a shallowly etched rear surface. The housing is supported from conventional lighting brackets and stands.

3,720,823
CHEMILUMINESCENT LIGHTING CONSTRUCTION

Richard I. Black, Closter, N.J., and Edward M. Yacko, Bridgeport, Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed July 6, 1970, Ser. No. 52,281
Int. Cl. F21v *9/16*
U.S. Cl. 240—2.25 **11 Claims**

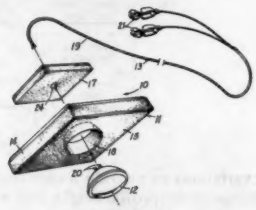


The invention relates to an improved chemiluminescent lighting construction. The new construction affords a highly substantial increase in light intensity and an increase in the workable temperature range for the light reaction, with a correspondingly small increase in material and dimensionality over prior constructions. The construction contemplates disposing a plurality of light producing layered elements within a transparent or translucent encapsulating envelope. The elements are separated by mesh-fabric spacers which allow an activating fluid to flow through the spacers to activate a chemiluminescent substance contained within the layered elements and thereby cause the layered elements to luminesce.

3,720,824
FISHING FLOAT LIGHT

Render B. Callahan, 2200 Enon Road S.W., Atlanta, Ga.

Filed June 4, 1971, Ser. No. 150,136
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 F **4 Claims**

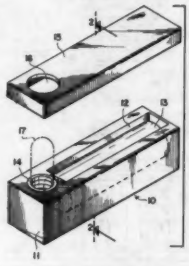


A fishing float light including a support member capable of floating on the surface of a body of water, illuminating means located on said support member so as to direct light under said water surface, and means electrically associated with said illuminating means for connecting said illuminating means to a power source.

3,720,825
MOUNTING APPARATUS FOR ILLUMINATED GIFT PACKAGES, GREETING CARDS, OR THE LIKE

Charles Franc, 1501 First Avenue, New York, N.Y.

Filed Feb. 29, 1972, Ser. No. 230,251
Int. Cl. F21v *21/00*
U.S. Cl. 240—10.65 **18 Claims**



Apparatus for mounting and holding a lamp and battery on a gift package, greeting card or the like. In one embodiment of the invention, the apparatus comprises an elongated rectangular-shaped housing in which the battery and a lamp socket are disposed. A metallic strip disposed on the bottom surface of a recess in the housing engages the battery casing and electrically couples it to the base of a lamp inserted in the socket. In another embodiment of the invention, a planar sheet of flexible material is scored and cut at its center to provide a pair of foldable flaps. A thin sheet of electrically conductive material is disposed over the planar sheet, and adhesive strips are placed on the conductive sheet adjacent the flaps. The flaps are folded so as to form a pair of parallel, triangular-shaped

support members between which the battery is disposed. Adhesive strips secure the battery casing to the sheet of material, and a conductive ring or strip of material having a circular aperture for receiving the lamp is disposed over the positive terminal of the battery. When a lamp is inserted in the conductive holder, it engages the metallic sheet of material and the lamp is illuminated.

Described in disclosure Document 6757 filed Sept. 22, 1971.

3,720,826

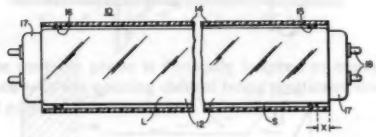
TUBULAR ELECTRIC DISCHARGE LAMP WITH INTEGRAL PROTECTIVE-INSULATING SLEEVE

John F. Gilmore, Verona, and Roy W. Epting, Parsippany, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 5, 1970, Ser. No. 34,806

Int. Cl. F21v *15/00*

U.S. Cl. 240—11.4 H **4 Claims**



A rigid open-ended sleeve of plastic or other light-transmitting material is suspended in telescoped spaced-apart relationship with the glass envelope of an electric lamp by slipping the sleeve over a pair of spaced rubber grommets that compressively grip the envelope. The grommets effect a force fit with the sleeve and the latter is retained in place on the lamp solely by the grommets. In the case of a fluorescent lamp or other type of low-pressure electric discharge lamp, the sleeve serves both as a protective shield against accidental breakage of the envelope and as an insulating jacket which permits the lamp to operate efficiently at low ambient temperatures (−18°C for example). The sleeve can be fabricated from colored plastic or glass to provide a low-cost fluorescent lighting unit that emits light of a selected color and is thus especially adapted for use in outdoor decorative lighting applications.

3,720,827

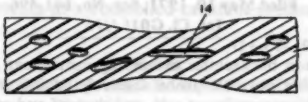
LIGHT TRANSMITTING FOAM PLASTIC LENSES

John M. Hemphill, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 28, 1970, Ser. No. 101,459

Int. Cl. F21v *9/08*

U.S. Cl. 240—46.59 **1 Claim**



Foam plastic lenses may be used to form lenses for light fixtures. The voids in the lens tend to diffuse the light. By selectively affecting the voids in different areas of the lens, a wide range of unique patterns can be created from an otherwise uniform and visually and stylistically uninteresting foam sheet. Patterns are provided by embossing or vacuum forming the lens in selected portions.

3,720,828

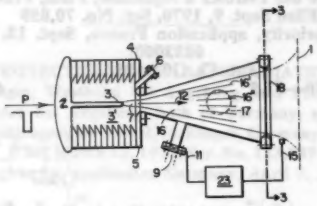
APPARATUS FOR AND METHOD OF CONTROLLING RELATIVISTIC CHARGED PARTICLE BEAM DISTRIBUTION AND TRANSPORT

Sam V. Nablo, Lexington, Mass., assignor to Energy Sciences, Inc., Burlington, Mass.

Filed Aug. 18, 1970, Ser. No. 64,734

Int. Cl. H01j *35/00*

U.S. Cl. 250—49.5 R **12 Claims**



The present disclosure involves methods and apparatus for actively controlling the charged particle density in a controlled pressure region or in the ambient atmosphere, from an accelerator capable of producing high intensity relativistic charged particle streams in a pulsed manner. The techniques are applicable to both high repetition rate applications, typical of industrial processors, electron tubes or accelerator/fusion reactor injectors, and to single pulse or low repetition rate systems. These methods utilize the self-magnetic forces of relativistic beams to accomplish controlled distribution, and avoid the complexities of electromagnetic scanners or lenses heretofore used for this purpose. Methods are also disclosed which utilize force control in partially charged neutralized beams as well as plasma conductivity control in freely drifting beam systems.

3,720,829

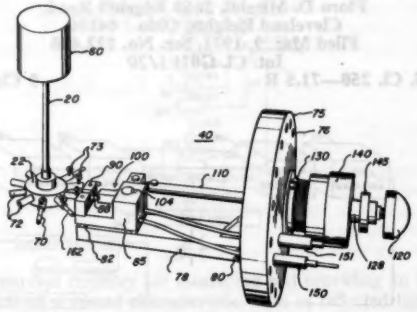
SAMPLE FRACTURING APPARATUS

Paul W. Palmberg, Minneapolis, Minn., assignor to Physical Electronics Industries, Inc., Edina, Minn.

Filed Feb. 28, 1972, Ser. No. 229,744

Int. Cl. H01j *37/20*

U.S. Cl. 250—49.5 B **11 Claims**



A sample fracturing apparatus especially adapted for use in a high vacuum enclosure for the preparation of samples in performing surface chemistry analysis on fresh surfaces of the

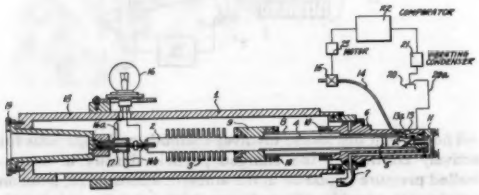
same is disclosed. The same fracturing apparatus is a mechanical linkage system operating through the walls of an enclosure and sealed therein to pivot a breaker member with respect to a sample being held in a portion of the breaker member to effectively snap the sample and provide a clean surface upon which analysis can be made. Suitable cooling of the samples is effected by transmitting the flow of a cooling medium through the sample holder via tube lines sealed within the fracturing frame.

3,720,830

X-RAY SPECTROMETRY APPARATUS HAVING A CONTROLLED X-RAY SOURCE

Etienne Larribau, Lons par Pau, Bernard Grubis, Paris, and Jean Sahores, Buros, France, assignors to Societe Nationale des Petroles d'Aquitaine, Paris, France

Filed Sept. 9, 1970, Ser. No. 70,859
Claims priority, application France, Sept. 12, 1969, 6931060
Int. Cl. G01n *23/22*
U.S. Cl. 250—51.5 **6 Claims**



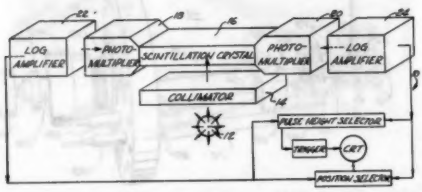
Spectrometry apparatus consists of a vacuum chamber, an electron and X-ray emission tube, a sample-holder, a device provided with slots, an analyser crystal and means for measuring an electrical value, a vacuum pump and means for introducing a gas inside the tube. The external envelope of the emission tube contains a quartz tube placed concentrically and a cathode and an anode both centred by means of said quartz tube; a tubular socket closes the open end of the external envelope while the quartz tube and the socket are provided, adjacent of the anode, with lateral apertures on the same axis; a capillary duct permits the introduction of a gas to the neighbourhood of said apertures; and servo-operating means permits the control of the flow of gas by the flux of electrons emitted by the anode.

3,720,831

SCINTILLATION CRYSTAL STRUCTURE COMPRISING A SERIES OF RECTANGULAR WAFERS FORMING A BAR

Floro D. Miraldi, 2660 Edgehill Road, Cleveland Heights, Ohio 44106

Filed Mar. 9, 1971, Ser. No. 122,440
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **9 Claims**



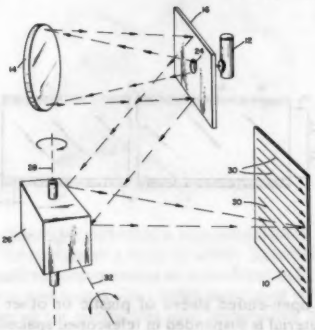
A scintillation crystal including a series of rectangular wafers having their adjacent faces adhered to one another with optical adhesive to form a bar. Radiation is received through a side of the crystal bar. Scintillations in the crystal are detected at the ends of the bar by means of photosensitive devices.

3,720,832

INFRARED SCANNING SYSTEM FOR MATERIAL TESTING

Wayne Richard Apple, Boulder, Colo., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed Feb. 3, 1971, Ser. No. 112,119
Int. Cl. G01j *1/04*
U.S. Cl. 250—83.3 H **4 Claims**



Herein described is an infra-red scanning system which includes a rotating scanning block. Reflecting mirrors are disposed about the vertical perphery of the block and are adapted to rotate therewith. A motor including a cam and follower causes the scanning block to continuously nod during the scanning thereof. A workpiece may then be disposed in the path of the scanner and thermal radiations therefrom are reflected to an infra-red detector. A folding mirror system is disposed between the detector and the workpiece and is used to focus the thermal energy to the detector. To decrease the obscurations within the field of view an aperture is placed in the center of the folding mirror and the detector is placed behind the aperture in the folding mirror in alignment with the primary mirror. The thermal energy is then focused from the reflective scanner through the hole in the folding mirror to the detector.

3,720,833

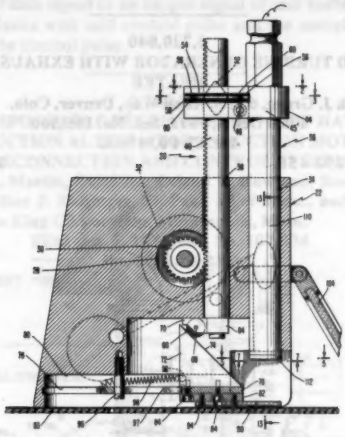
RADIATION BACKSCATTER MEASURING INSTRUMENT

William D. Hay, Peekskill, N.Y., assignor to Unit Process Assemblies, Inc., Woodside, N.Y.

Filed May 10, 1971, Ser. No. 141,496
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 D **10 Claims**

A radiation backscatter measuring instrument is provided for use with a portable probe assembly having an elongated casing with an opening at one end thereof and containing a radiation source positioned in predetermined relation therewith and a radiation detector for detecting radiation backscattered from a workpiece exposed to radiation from the source through the casing opening. The radiation backscatter measuring instrument includes a planar, horizontally disposed, transparent locator with a series of guide lines on the bottom surface thereof which is positioned over the selected locus of

measurement on the horizontally supported workpiece. The locator is then horizontally retracted from its locating position



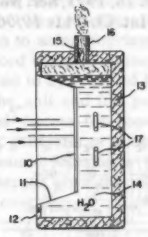
while the portable probe is vertically lowered to engage the workpiece with the opening thereof being positioned over the selected portion of the workpiece to be tested.

3,720,834

HIGH POWER INFRARED IMAGING DEVICE

Philip J. Allen, North Forestville, Md., assignor to the United States of America as represented by the Secretary of the Navy

Filed June 15, 1971, Ser. No. 153,325
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 H 4 Claims



This disclosure is directed to a liquid crystal detector for imaging high power infrared laser beams. The system includes at least one detector screen associated with a container including boiling a solution therein to maintain a constant temperature for the detector screen. The detector screen is operative to produce a visible image of incident infrared laser light. The boiling solution not only maintains a constant temperature for the liquid crystal medium but provides a means for dissipating the heat of the laser beam which further heats the solution to form a vapor or steam at a controlled constant pressure.

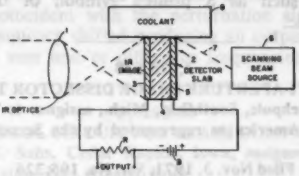
3,720,835

SCANNING INFRARED RADIATION SENSOR

George R. Pruett, Richardson, Tex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 24, 1967, Ser. No. 619,138
Int. Cl. H01j 39/00; H01l 15/00
U.S. Cl. 250—83.3 HP 4 Claims

An infrared image is generated on an oscilloscope by sweeping a spot of short wavelength radiation across a P-N junction in doped germanium while applying voltage across a load resistor to the intensity modulation of an oscilloscope, the current passing through the load resistor being proportional to the intensity of infrared radiation incident on the P-type surface.

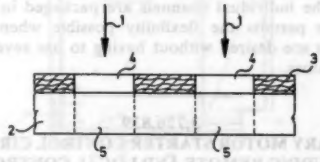


3,720,836

PROTECTION FROM LASER RADIATION

Ernst Donges, Westheim bei Augsburg, and Fritz Wagner, Gersthofen bei Augsburg, both of Germany, assignors to Sigri Elektrographit GmbH, Meitingen, Germany

Filed March 12, 1971, Ser. No. 123,589
Claims priority, application Germany, April 7, 1970, P 20 16 452.7
Int. Cl. G21f 1/12
U.S. Cl. 250—108 FS 8 Claims



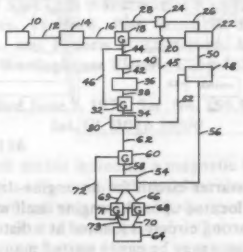
For protection from laser radiation, a shielding material composed of a sheaf of fabric-like, flexible graphite foils is placed between the radiation source and the object to be shielded.

3,720,837

MEASURING AND INDICATING APPARATUS

Anton Hubert Clemens and Richard La Verne Hurtle, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 20, 1971, Ser. No. 210,068
Int. Cl. H01j 39/12
U.S. Cl. 250—206 10 Claims



Apparatus circuitry for measuring and providing an indication of a sensed characteristic, such as reflected light, is described. It comprises in combination a sensor, a voltage controlled oscillator functioning as an analog-to-digital convertor, scalers to provide certain count values, a computation unit connected to such scalers to provide an

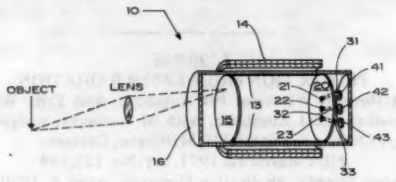
output count which is directly related to a function of the sensed characteristic being measured, and a decoder scaler and indicator capable of converting the computation unit output to a suitable signal so as to provide an indication, such as a printed symbol, of the sensed characteristic.

3,720,838

MULTI-APERTURE IMAGE DISSECTOR TUBE

Clive E. Catchpole, Southfield, Mich., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 3, 1971, Ser. No. 195,326
Int. Cl. H01j *39/12*
U.S. Cl. 250—207 R **2 Claims**



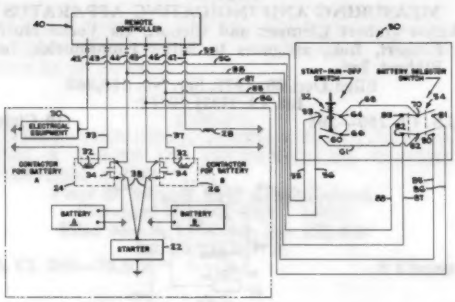
An image dissection tube is provided with a plurality of apertures in which each aperture is a different size. Each aperture is associated with an independent photomultiplier channel, and the individual channels are packaged in the same tube. This permits the flexibility possible when different resolutions are desired without having to use several image dissector tubes.

3,720,839

AUXILIARY MOTOR STARTER CONTROL CIRCUITRY INCLUDING REMOTE AND LOCAL CONTROL OF PLURAL BATTERIES

Gene L. Spahr, Zionsville, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed March 17, 1972, Ser. No. 235,737
Int. Cl. F02h *11/00*
U.S. Cl. 290—37 **3 Claims**



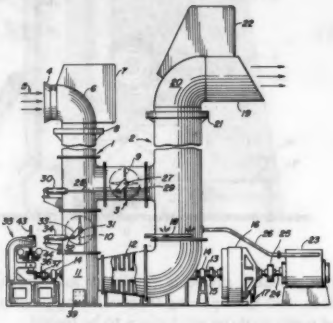
An auxiliary starter circuit for an engine-driven fire pump which circuit is located upon the engine itself while the primary automatic starting circuit is located at a distance therefrom whereby the engine may be easily started manually if desired. The circuitry components for starting the engine include two alternatively usable batteries which are arranged to be selectively connected in series with an engine starter. The auxiliary starter circuit includes a double pole, two-position toggle switch which selects the desired battery and a three-position (start-run-off) toggle switch which is manipulated to momentarily connect the starter in series with the selected battery until the engine has been started and to thereafter permit the engine to continue to run until it is switched to the "off" position.

3,720,840

WIND TURBINE GENERATOR WITH EXHAUST GAS HEATER

Hendrick J. Gregg, 625 S. Alton Way, Denver, Colo.

Filed Oct. 6, 1971, Ser. No. 186,860
Int. Cl. F03d *9/00*
U.S. Cl. 290—55 **10 Claims**



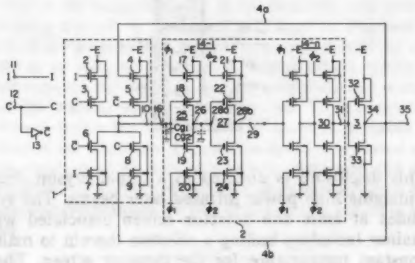
A gas turbine driven electric generator system is provided which makes it possible to utilize wind as the motive force and to reduce or eliminate pollution.

3,720,841

LOGICAL CIRCUIT ARRANGEMENT

Yasoji Suzuki, Kawasaki-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 28, 1971, Ser. No. 212,936
Int. Cl. G11c *19/00*
U.S. Cl. 307—221 C **4 Claims**



A logical circuit arrangement is comprised by a switching circuit including a first logic unit constituted by insulated gate field effect transistors of one conductivity type channel and a second logic unit constituted by insulated gate field effect transistors of the other conductivity type channel; a shift register applied with the output switching circuit and including a plurality of bit elements, each constituted by first and second cascade connected complementary inverters which are composed of insulated gate field effect transistors of the complementary conductivity type channel; a complementary buffer circuit connected to the output from the buffer circuit to the first and second logic units; and a circuit for applying a logical input data signal, a control pulse and a complement signal of the control signal to the gate electrodes of the insulated gate field effect transistors of the switching circuit respectively for

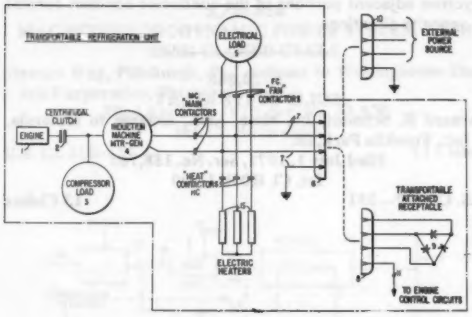
selectively switching the polarity of the logical output of the first and second logic units to supply said shift register with said input data signal or an output signal of said buffer circuit in accordance with said control pulse and the complemental pulse of the control pulse.

3,720,842

TRANSPORTABLE REFRIGERATION UNIT HAVING INDUCTION ALTERNATOR-INDUCTION MOTOR RECONNECTION AND CONTROL SYSTEM

Robert L. Martin, Excelsior; Leland L. Howland, Rosemount, and LeRoy J. Eichinger, St. Paul, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Oct. 7, 1971, Ser. No. 187,434
Int. Cl. H01f 1/00
U.S. Cl. 307—68 **5 Claims**



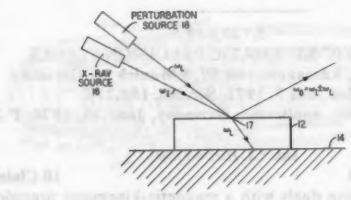
This invention relates to a transportable refrigeration unit having two modes of operation and more particularly to such a refrigeration unit having an induction machine that may function as a prime mover or as a generator of electric power after the proper connection to an appropriate receptacle has been made with a power cord which is connected to the induction machine and is adapted to be received by either a receptacle that is attached to the unit and has passive electrical components so connected thereto for converting the induction machine to an electric generator or to be received by an external electric power source receptacle without passive components connected thereto when the induction machine is to function as a prime mover.

3,720,843

NONLINEAR DEVICE FOR FREQUENCY SHIFTING X-RAYS

Peter M. Eisenberger, Morristown, and Samuel Leverte McCall, Jr., Gillette, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 10, 1971, Ser. No. 122,702
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 **6 Claims**



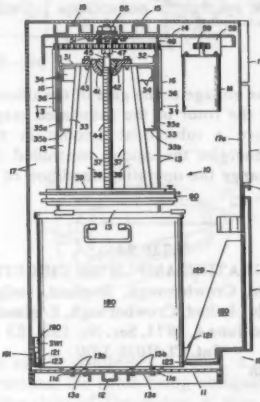
A nonlinear device includes a medium (preferably characterized by a low X-ray absorption constant and near structural perfection) in which is established a time-varying microscopic charge density "cloud" by the application thereto of a perturbation signal of frequency ω_L. An input X-ray signal of frequency ω_I is incident on the medium coincident with the perturbation signal and is thereby frequency shifted producing an output X-ray signal at the sum and/or difference frequencies $\omega_I \pm \omega_L$.

3,720,844

CONTROL CIRCUIT FOR TRASH COMPACTOR

Leonard J. Sahs, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed July 6, 1971, Ser. No. 159,680
Int. Cl. H02b 1/24
U.S. Cl. 307—112 **3 Claims**



Initial movement of the ram of a trash compactor actuates a switch which prepares a circuit for reverse flow of current through the start windings of an electric drive motor after a centrifugal switch incorporated therein has opened. When compaction of the trash has slowed the motor to a predetermined speed, the centrifugal switch recloses and the ram is automatically reversed. Other switches and means for controlling the ram's movement, as well as for safety purposes, are also disclosed, together with details of the structure of the trash compactor generally, the ram and the mounting of the container in which the trash is compacted.

3,720,845

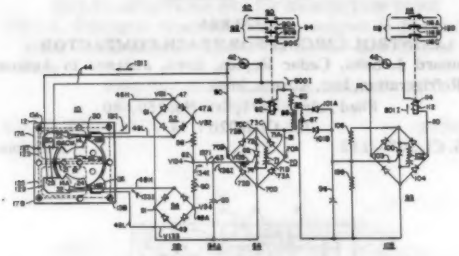
LIMIT SWITCH WITH HIGH HYSTERESIS

John R. Reeves, Trafford, Pa.; Bruce R. Dow, Altamonte Springs, Fla., and Francis T. Thompson, Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 7, 1971, Ser. No. 150,575
Int. Cl. H01h 36/00
U.S. Cl. 307—116 **23 Claims**

A limit switch means including a magnetic transducer comprising a stator and rotor which supplies electrical energy to an associated comparator circuit. The output of the comparator circuit is connected to the gate of a silicon controlled rectifier and a voltage boosting device. The magnetic transducer is sensitive to changes in angular position of the rotor which is coupled mechanically to an associated cam, lever or similar component. When the relative position of the associated component is changed, the rotor is moved to such a position as to cause the voltage comparator circuit to supply a signal to the silicon controlled rectifier's gate sufficient to energize or turn on the silicon controlled rectifier. This allows current to flow through one or more circuits to which the silicon controlled

rectifier is connected. In addition, where desired transformer coupling may be provided to drive or control other circuits whose functions may be complementary to that of the circuit which is primarily controlled. A voltage boosting means responds to the turning on of the silicon controlled rectifier in such a manner as to create a hysteresis effect by making use of



an increase in the voltage at the gate of the silicon controlled rectifier so that the rotor of the associated magnetic transducer must move a substantial amount in the opposite direction to deenergize the silicon controlled rectifier and consequently change the operating condition of any circuits which it controls.

3,720,846

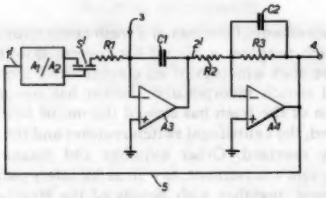
INTEGRATING AMPLIFIER CIRCUITS

Alan John Borer, Crowborough, England, assignor to Servomex Controls Limited, Crowborough, England

Filed June 4, 1971, Ser. No. 150,153

Int. Cl. H03k *5/00*

U.S. Cl. 307—238 **6 Claims**



An integrating amplifier circuit is provided which overcomes the problem of input voltage offset and enables a cheaper amplifier to be employed in a given situation. Input circuits are disclosed which behave as current generators to achieve the desired result.

3,720,847

POWER CURRENT CRYOTRON WITH FLAT GATE CONDUCTOR

Ernst Massar, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

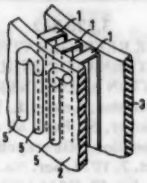
Continuation-in-part of Ser. Nos. 805,701, March 10, 1969, abandoned, and Ser. No. 805,606, March 10, 1969, abandoned. This application Oct. 13, 1971, Ser. No. 188,912

Claims priority, application Germany, March 12, 1968, P 12 88 701.3; March 15, 1968, P 16 39 427.7

Int. Cl. H03k *17/00*

U.S. Cl. 307—245 **25 Claims**

A power current cryotron comprises an insulating carriage structure and a flat gate conductor of superconducting material on the carrier. The gate conductor may form continuous flat winding turns beside one another on the carrier. The winding turns are distributed along the carrier for substantially uniform magnetic field strength along the predominant portion of the gate conductor length. The conductor may be of



meander configuration so that during operation of the cryotron adjacent portions of the conductor conduct current in opposite directions.

3,720,848

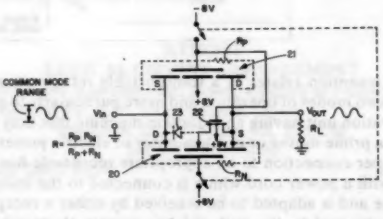
SOLID-STATE RELAY

Bernard H. Schmidt, Jr., Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 1, 1971, Ser. No. 158,761

Int. Cl. H03k *17/00*

U.S. Cl. 307—251 **13 Claims**



There is disclosed an improved solid-state relay comprising a C-MOS analog switch or transmission gate in which the change in input-output resistance for variations in the input signal is minimized by maintaining the substrate of the N-channel device at the same potential as that of the source of the N-channel device. The N-channel substrate provision source are maintained at the same potential by the privision of an additional P-MOS device located on the same integrated circuit chip in which the additional P-MOS device is rendered conductive during that period of time which the switch is in its conducting mode.

ERRATUM

For Class 307—141 see:
Patent No. 3,720,858

3,720,849

MAGNETIC-KINEMATIC PRECISION STAGES

Arpad Bardocz, Rumannstrasse 57, 8 Munich 23, Germany

Filed June 7, 1971, Ser. No. 150,272

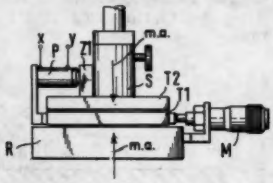
Claims priority, application Germany, June 16, 1970, P 20 29 715.8

Int. Cl. H01v *7/00*

U.S. Cl. 310—8 **10 Claims**

The application deals with a magnetic-kinematic precision stage system. The essence is, that stages with linear or angular movement are composed of at least two plates, which move with respect to each others on ball joints. The two plates are

held together with retaining magnets. This solution garanties the complete elimination of the backlash. The plates may move very freely, practically without force, with respect to

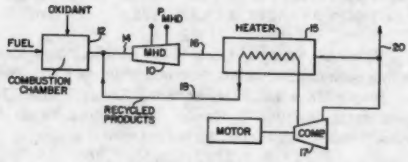


each other. Because practically there is no force, as consequent there is very low friction, and thus adjustement with the greatest precision is possible.

3,720,850
MAGNETOHYDRODYNAMIC POWER SYSTEM WITH SEMI-CLOSED CYCLE

Stewart Way, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 30, 1970, Ser. No. 33,430
Int. Cl. H02n *4/02*
U.S. Cl. 310—11 **11 Claims**

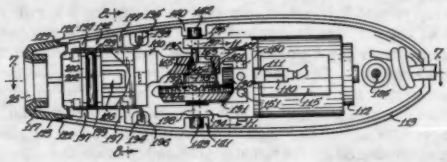


An MHD power system is provided in which the working fluid consists of combustion gases that are recycled through an MHD generator with new fuel and oxidant being added and an equal mass of gas being discharged at some point in the cycle to provide what may be called a "semi-closed cycle." Such a cycle provides improved electrical conductivity of the working fluid as compared with open cycle systems that are operated with excess oxidant while it also provides increased mass flow as compared with open cycle systems that are operated without excess oxidant.

3,720,851
RECIPROCATING MANICURE DEVICE

Robert S. Waters, Oak Brook, and Albert R. Spohr, Park Ridge, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jan. 11, 1971, Ser. No. 105,581
Int. Cl. H02k *7/14*
U.S. Cl. 310—50 **5 Claims**

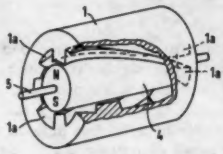


A manicure device is provided which imparts reciprocating motion to a removable manicure tool. An electric motor drives a pinion gear which in turn drives a ring gear which has an integral eccentric. A tool holder is moved in a reciprocating motion by the eccentric and at its end receives the manicure tool. The tool holder is guided in its reciprocating motion by means of roller bearings which ride on the inner surfaces of a hollow enclosure. A handle containing the motor and the tool holder is stored in the upper portion of a plastic case along with the manicure tools, and the line cord is stored in a recessed enclosure that is accessible from the bottom of the case.

3,720,852
DEVICE FOR DAMPENING OSCILLATIONS IN A MIDGET MOTOR

Gunther Vieweg, Nuremberg, Friedrich Kapplus, Nuremberg-Eibach, and Hans Ott and Jurgen Wenk, Nuremberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 30, 1971, Ser. No. 129,539
Claims priority, application Germany, Apr. 9, 1970, P 20 16 866.5
Int. Cl. H02k *5/16*
U.S. Cl. 310—90 **3 Claims**



A midget motor comprises a rotor, a stack of slotted stator laminations, the rotor being obliquely inclined with respect to the slots of the stator, a stop means for the rotor and a bearing means bearing against one end of the shaft of the rotor, the stop and bearing means connected to the housing of the motor for elastic members for isolating the oscillatory movement of the rotor from the housing.

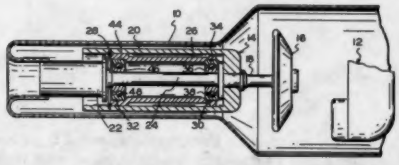
ERRATUM

For Class 310—43 see:
Patent No. 3,720,914

3,720,853
BEARING STRUCTURE FOR X-RAY TUBE WITH ROTATING ANODE

Zed J. Atlee, and Roy F. Kasten, Jr., both of Elmhurst, Ill., assignors to Picker Corporation, Cleveland, Ohio

Filed March 2, 1971, Ser. No. 120,212
Int. Cl. H01j *35/10*
U.S. Cl. 313—60 **4 Claims**



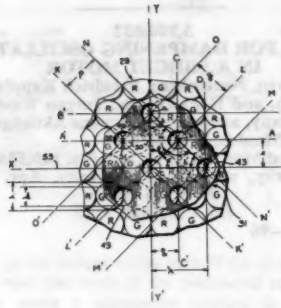
An X-ray tube having a rotating anode supported by a refractory carbide ball bearing structure.

3,720,854

TWO COLOR, SHADOW MASK-TYPE CATHODE RAY TUBE

Donald L. Say, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 16, 1971, Ser. No. 153,695
Int. Cl. H01j 25/06, 31/20, 29/32
U.S. Cl. 313—92 B 4 Claims



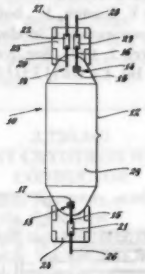
An improved aperture mask is provided for use in a two beam shadow mask type of color cathode ray tube. The mask is utilized in the formation and subsequent operation of a patterned screen including a repetitive array of two phosphor areas. The multitude of apertures defined by the interstitial webbing of the mask member are arrayed in a plurality of parallel rows having given directional orientations. Any three mutually adjacent apertures in any two adjacent parallel rows are oriented to form an isosceles right triangular relationship. The resultant screen associated therewith exhibits enhanced resolution and brightness.

3,720,855

ELECTRIC DISCHARGE LAMP

Phillip J. Gardner, Bayside; H. Graham Silver, Kings Point; Samir A. Ahmed, New York, all of N.Y., and Adam Heller, Sharon, Mass., assignors to GTE Laboratories Incorporated, Bayside, N.Y.

Filed Feb. 28, 1972, Ser. No. 229,933
Int. Cl. H01j 17/20
U.S. Cl. 313—229 23 Claims



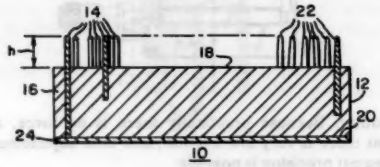
An electric discharge lamp comprising a sealed light-transmissive envelope and a fill within the envelope; the fill including, as the primary light-emitting material, at least one oxytrihalide of a Group VB element, such as vanadium, niobium, and tantalum. The partial pressure of the oxytrihalide is in the range of from about 0.001 torr to about 200 torr.

3,720,856

BINARY MATERIAL FIELD EMITTER STRUCTURE

Thomas P. Brody, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 29, 1970, Ser. No. 59,178
Int. Cl. H01j 1/02
U.S. Cl. 313—309 5 Claims



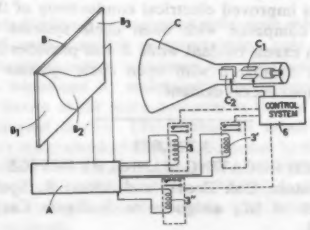
A field emitter structure comprises a body of a binary eutectic alloy wherein thin filaments of the minor component of the alloy are embedded in, and a plurality of the thin filaments project above, a surface of a matrix enriched by the major component of the alloy thereby providing a highly effective and inexpensive non-thermionic source of electrons for a variety of vacuum and other applications.

3,720,857

APPARATUS FOR DETECTING A POSITION OF ELECTRON BEAM FOR USE WITH A CATHODE-RAY TUBE

Tetsuji Shimizu, Nagoya, Aichi; Sohei Hibino, Nagoya, Aichi; Hajime Sumida, Showa-ku, Nagoya; Shinichi Ueno, Nagoya, and Tateki Muraoka, Matsushincho, Kasugai, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishi-Kasugai-gun, Aichi Prefecture, Japan

Filed Feb. 2, 1970, Ser. No. 7,708
Claims priority, application Japan, Feb. 7, 1969, 44/8666
Int. Cl. H01j 39/12, 31/26
U.S. Cl. 315—10 10 Claims

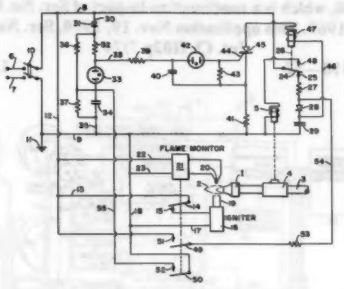


The present invention discloses comprising a cathode-ray tube having a fluorescent screen and a plurality of deflecting plates, a light sensitive means consisting of two or more photocells arranged so as to exactly confront the fluorescent screen of the cathode-ray tube, and an electric circuit connected to said light sensitive means and selecting a maximum signal out of signals applied from said cathode-ray tube, thereby detecting a position of signal. As the electric circuit connected to the light sensitive means and selecting the maximum signal, there may be employed an electric circuit which comprises operational circuits, relays and diodes and is adapted to select two signals in combination out of three signals produced on the signal source and provide an output of positive, negative or zero voltage, thereby operating any of relays through the diode to indicate the maximum signal, thereby improving the operational reliability and reducing the manufacturing cost.

3,720,858
RELAY TIMING SYSTEM

Gary M. Mercier, Columbus, Ohio, assignor to Columbia Gas System Service Corporation, Columbus, Ohio

Filed July 20, 1971, Ser. No. 164,291
Int. Cl. H01h 37/00
U.S. Cl. 307—141 8 Claims



A timing system having a pair of conductors connected to an alternating voltage source through a switch. The system includes a first charging circuit across the pair of conductors consisting of a first condenser, a diode and an impedance whereby the condenser charges at a given rate. A second charging circuit across the pair of conductors, consisting of a rectifier, a trigger tube and a second condenser and current limiting resistance, acts as a timing circuit. The second condenser receives incremental charges and after a predetermined delay charges above a predetermined minimum value. A third charging circuit is connected across the trigger tube and second condenser and includes a resistance and a third condenser, with a second trigger tube and a resistance across the third condenser. When the second condenser reaches the above predetermined minimum value, the voltage on the third condenser fires the second trigger tube and generates a voltage pulse across its resistance which is supplied to the igniting electrode of a silicon control rectifier which conducts to discharge the first condenser through the operating coil of a relay. The discharge current from the first condenser rises above the pull-in value for the relay and remains above the hold-in value for the relay for a predetermined time after which it drops below such hold-in value. The relay is shown controlling the solenoid valve for a gas burner system.

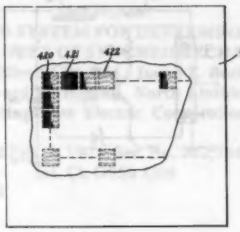
The gas burner system is provided with flame igniter and flame monitoring means. The flame monitoring means is provided with switches which cause the relay to remain closed in the presence of the flame, to remain in an open state upon failure of the flame to ignite and to recycle the system once upon a subsequent flame failure. The entire system can be recycled by opening the switch to the voltage source and then reclosing it.

3,720,859
IMAGE DISPLAY SYSTEM

Richard H. Hilden, Minneapolis, Mich., assignor to Dicomed Corporated, Minneapolis, Minn.

Filed May 4, 1970, Ser. No. 34,120
Int. Cl. H01j 29/70
U.S. Cl. 315—23 18 Claims

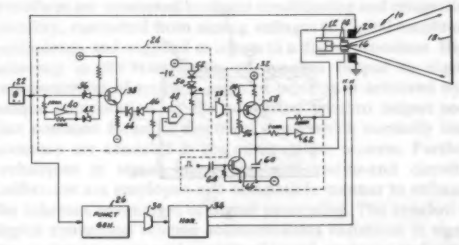
An image display system wherein control means are connected to a dark trace storage cathode ray tube to control the electrode beam deflection of the cathode ray tube to produce plurality of individually-spaced, dot-sized, minor rasters. The minor rasters are spaced uniformly over the face of the cathode ray tube to produce a major raster. The intensity of the cathode ray tube electron beam is switched between an off condition and an on condition in response to input intensity signals. An input intensity signal is supplied to control the intensity level of each minor raster. The input intensity signal controls the amount of time that the electron beam is on during each minor raster so that the electron beam paints a particular intensity level for each minor raster. The picture displayed on the cathode ray tube is formed from the plurality of minor rasters, each having its own light absorption characteristic to alter the transmission of light to form an overall picture.



3,720,860
DYNAMIC ROTATION OF CATHODE RAY TUBE DISPLAY

David E. Wadlow, Middle Barton, England, assignor to United Aircraft Corporation, Hartford, Conn.

Filed Jan. 12, 1971, Ser. No. 105,918
Int. Cl. H01j 29/70
U.S. Cl. 315—26 12 Claims



A system for rotating a cathode ray display in which a signal proportional to the desired degree of rotation is applied to an auxiliary rotating coil on the display tube at a location beyond the deflection system and to a function generator providing an output signal which is applied to the display sweep circuit to compensate for non-linear variations in size of the display occasioned by the rotation thereof.

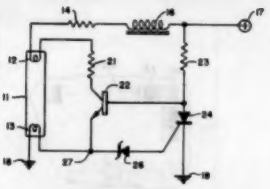
3,720,861
FLUORESCENT LAMP IGNITING CIRCUIT

Francis P. Kahanic, Arlington Heights, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 21, 1970, Ser. No. 99,934
Int. Cl. H05b 37/00, 41/14
U.S. Cl. 315—101 14 Claims

A transistor is between, and in series with, the heating filaments of a fluorescent lamp, to allow current flow therethrough when power is initially applied to the circuit. A predetermined time after power is applied to the circuit, determined either by the time required to charge a capacitor to a predetermined potential or by the time required to in-

crease the impedance of one of the heating filaments to a predetermined impedance as a result of heating caused by I^2R losses, the transistor is rendered nonconductive. When the



transistor is rendered nonconductive an induction coil, in series with the filaments, provides a momentary additive transient voltage to ignite the lamp.

3,720,862

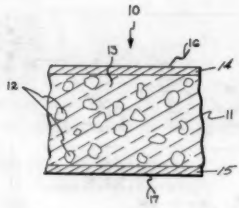
CAPACITOR WITH HIGH K DIELECTRIC MATERIALS

Daniel W. Mason, West Peabody, Mass., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 107,566, Jan. 18, 1971, Pat. No. 3,679,440, which is a continuation-in-part of Ser. No. 54,591, July 13, 1970, abandoned. This application Jan. 27, 1972, Ser. No. 221,425

Int. Cl. H01g *3/06*

U.S. Cl. 317—258 **10 Claims**



Unique dielectric compositions may be used to formulate thick film pastes for printing microelectronic capacitors. The resulting dielectrics exhibit dielectric constants greater than about 500 and capacitances greater than about 80,000 picofarads per square inch at a thickness of at least about 1.0 mils. The unique dielectric compositions comprise about 55–76 percent by weight of a ferroelectric material and 45–24 percent of a glass binder. The glass binder employed comprises a lead barium borosilicate glass and a ferroelectric material previously dissolved therein. The composition is formulated into a printing paste by first dissolving 20–30 percent by weight ferroelectric into 70–80 percent by weight lead barium borosilicate glass binder, cooling the newly formed glass to a solid state, comminuting the glass to a particle size of less than about 1 micron and thereafter admixing the comminuted glass with the same particulate ferroelectric in an amount as indicated. This admixture is then added to a liquid organic carrier vehicle to formulate the printing paste. The printing paste is then printed into a chosen design and fired at a temperature of approximately 1,000°–1,050° C. to produce a highly dense, uniform, and substantially crack-free dielectric material.

3,720,863

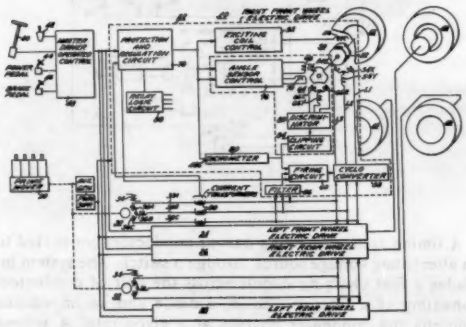
ELECTRICALLY DRIVEN VEHICLE STEERED BY CONTROL OF POWER AND SPEED OF TRACTIVE ELEMENTS

William L. Ringland, Greendale; Manfred E. Neumann, New Berlin; Ernst K. Kaeser, West Allis; Thomas P. Gilmore, Wauwatosa, and Allois F. Geiersbach, Milwaukee, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 853,462, Aug. 27, 1969, Pat. No. 3,577,050, which is a continuation-in-part of Ser. No. 824,223, May 13, 1969. This application Nov. 19, 1970, Ser. No. 91,115

Int. Cl. H02p *7/74*

U.S. Cl. 318—52 **13 Claims**



The wheels of a vehicle are driven by inductor type synchronous motors having solid rotors without windings and commutators. A diesel on the vehicle drives a pair of high frequency rotating generators each of which supplies power to a pair of the synchronous motors. Power pedal means actuated by the operator derive a power signal proportional to the desired tractive effort for the vehicle. A separate electric drive for each motor includes means for deriving a control signal modulated at motor speed, a cycloconverter between each motor and its generator regulated by the control signal, tachometer means for deriving a speed signal which is a function of motor speed, and control means responsive to both the power signal and speed signal for regulating the magnitude and phase of the control signal so that the motor output power is constant over the speed range at a level in accordance with the power pedal setting.

Brake means actuated by the operator derive a brake signal, and the vehicle has means for shifting the phase of the control signals for all the motors to regeneratively brake them when the brake signal exceeds the power signal. The vehicle has travel direction selector means for shifting the phase of all the control signals to reverse the direction of motor rotation and thus propel the vehicle backward. The vehicle has manually operated means for setting a speed limit for the vehicle and means for deriving a speed limit signal which is additive to the brake signal to regeneratively brake the motors when vehicle speed exceeds the set speed limit. Turn compensation means increase the power supplied to the motors of the wheels on the outside of a turn and decrease the power supplied to the motors of the wheels on the inside of the turn as a function of the degree of turn and the magnitude of the power signal.

3,720,864

STEP MOTOR CONTROL CIRCUIT

Walter Kolhagen, 818 Oakley Ave., Elgin, Ill.

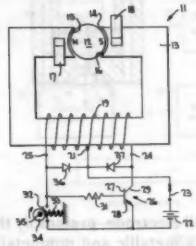
Filed May 6, 1970, Ser. No. 35,066

Int. Cl. H02k *29/00*

U.S. Cl. 318—138 **18 Claims**

A permanent magnet step motor rotor is driven in response to oppositely directed magnetic fluxes coupled by a magnetic

core to the rotor. The flux in one direction is derived by selectively feeding D.C. current in one direction through a winding means on the core and a transistor emitter collector path while a switch is open circuited to forward bias the transistor base emitter junction. Flux in the other direction is derived by closing the switch and thereby back biasing the transistor so that D.C. current flows in the winding means in the opposite direction. The rotor is locked in place under steady state conditions with a D.C. current derived from the circuit including



the transistor and switch. The steady state current is less than the current required to drive the rotor and is maintained at the lower level by including capacitors in bias circuits for the transistor. To drive the rotor in response to changing magnetic fluxes there may be provided either shading rings, extended, segmented core pole faces, or a rotor having major and minor permanent magnet poles. To provide balanced magnetic flux in opposite magnetic core pole faces coupling flux to the rotor a low resistivity slotted ring is provided.

3,720,865

BRUSHLESS D.C. MOTOR

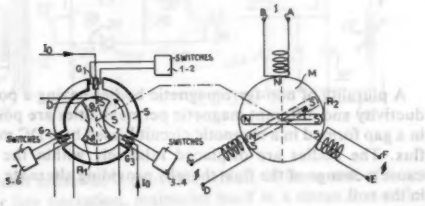
Marc Bregeault, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation-in-part of Ser. No. 30,460, April 21, 1970, abandoned. This application March 24, 1972, Ser. No. 237,629

Claims priority, application France, April 29, 1969, 6913570

Int. Cl. H02k *29/00*

U.S. Cl. 318—138 **7 Claims**



A brushless D. C. motor has a stator, the windings of which are connected to a D. C. source through the medium of pairs of switches in such a manner that these windings are permanently fed and that the current is reversed in the windings at the moment when no counterelectromotive force is induced therein, this winding being at this moment put in series with at least one other winding in which the counterelectromotive force induced is not zero.

3,720,866

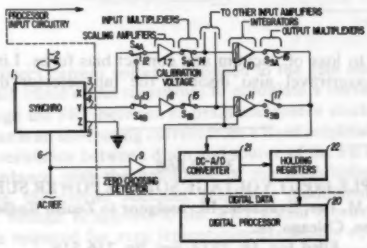
METHOD AND SYSTEM FOR DETERMINATION OF ROTOR ANGLE OF SYNCHROMECHANISM

Karl B. Avellar, Ellicott City, Md.; James E. Buchanan, Bowie, Ohio, and Edward R. Higgins, North Linthicum, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1972, Ser. No. 222,764

Int. Cl. G05b *1/06*

U.S. Cl. 318—654 **16 Claims**



Synchromechanism outputs in alternating current (AC) waveform are processed by signal conditioning and integrating circuitry, converted from analog voltages to digital amplitude equivalents, and supplied as inputs to a digital processor. High accuracy in the conversion of synchro output to digital representation of synchro angle or position is achieved by a unique computation on the converted synchro output such that common forms of electrical noise which normally limit accuracy are canceled in the computation process. Further, techniques in signal integration and end-to-end circuitry calibration are employed in a compatible manner to enhance the inherent advantages of digital processing. The synchro to digital conversion scheme accommodates variations in signal processing to meet requirements of speed, accuracy and cost.

ERRATUM

For Class 321—47 see:
Patent No. 3,720,868

3,720,867

FAIL SAFE VACUUM TYPE CIRCUIT INTERRUPTER AND ASSOCIATED LOAD CURRENT TAP CHANGER FOR ELECTRIC INDUCTION APPARATUS

William H. Rathbun, Pittsfield, Mass., assignor to General Electric Company

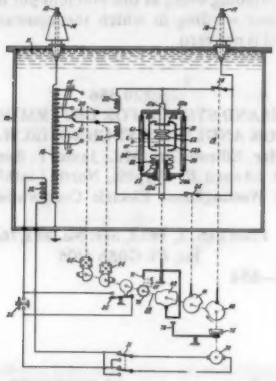
Filed Feb. 4, 1972, Ser. No. 223,631

Int. Cl. H02p *13/06;* **H01h** *9/30*

U.S. Cl. 323—43.5 R **12 Claims**

A load current tap changer for electric power transformers includes a vacuum type arcing-duty current interrupter immersed in dielectric fluid and biased to closed position by dif-

ferential pressure. Overtravel limit switch means is actuated to shunt the vacuum arc gap upon excessive contact separation due to loss of vacuum and contact bias force. Limiting contact overtravel also disables the tap selector driving means.

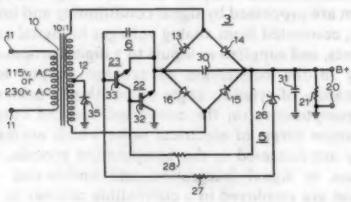


3,720,868

MULTIPLE INPUT VOLTAGE SOURCE POWER SUPPLY

Clarence M. Lee, Evanston, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 10, 1972, Ser. No. 216,519
Int. Cl. H02m 7/20
U.S. Cl. 321—47 **7 Claims**



A power supply for supplying a predetermined d.c. output voltage notwithstanding its connection to external a.c. voltage sources of different voltage magnitudes operates in either a full wave rectifying or diode ridge rectifying mode to accommodate the different source voltage. A zener diode senses the source voltage magnitude and a mode control voltage controls a switching circuit for establishing the power supply in the proper rectifying mode.

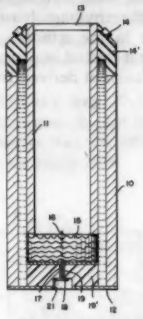
3,720,869

BATTERY CELL STRUCTURE AND METHOD OF DETERMINING STATE OF CHARGE

John J. Rowlette, Arcdia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 18, 1970, Ser. No. 64,718
Int. Cl. G01n 27/42
U.S. Cl. 324—29.5 **3 Claims**

The method of directly determining or monitoring a state-of-charge or condition of an electrode contained in an electric cell and modified cell structure provided therefor by making a resistance measurement in a direction at right angles to the interface between the electrode and a separator. The method provides a measure of the conductivity or resistance of an electrode in a cell assembly. The measurement is taken of the resistance of a cell electrode, preferably the anode, by its conversion between a metallic and nonmetallic phase during the course of its charge or discharge.

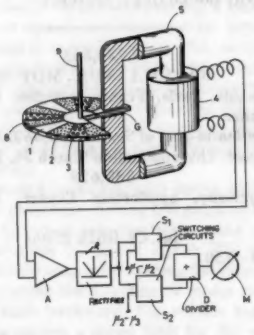


3,720,870

APPARATUS FOR DETERMINING THE PERMEABILITY OF A NON-MAGNETIC MEDIUM

Osamu Sueda, 340-2, Sakuro, Minoo-shi, Osaka, Japan

Filed July 19, 1971, Ser. No. 163,822
Int. Cl. B01r 33/12
U.S. Cl. 324—34 R **12 Claims**



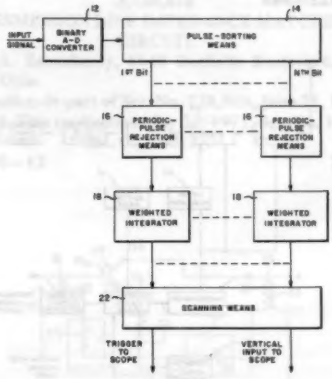
A plurality of non-ferromagnetic bodies having a poor conductivity and different magnetic permeabilities are positioned in a gap formed in a magnetic circuit biased by a DC magnetic flux. The bodies are displaced relatively within the gap to cause a change of the flux, thereby providing alternate outputs in the coil.

These alternate outputs are proportional to the difference between the magnetic permeabilities of these bodies. If one body is a sample of known permeability and the other body is sample of unknown permeability to be measured, the unknown permeability of the sample to be measured may be determined instantaneously by suitably processing or evaluating the alternate output or outputs.

3,720,871
DIGITAL FUNDAMENTAL PRP ANALYZER FOR PULSE TRAIN SIGNALS

Bruce J. Brown, 4801 Kenmore Avenue, Apt. 1022, Alexandria, Va.

Filed Dec. 14, 1971, Ser. No. 207,757
Int. Cl. G06f *15/20*; G01r *23/02*; H03b *1/04*
U.S. Cl. 324—78 D 7 Claims

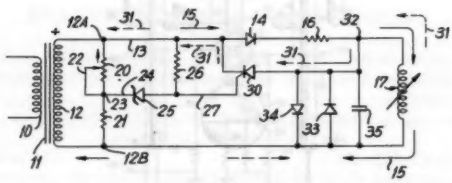


A pulse-repetition-period and analyzer comprising binary converter means for converting an input waveform into a series of equal-amplitude binary pulses, shift register means for sorting the pulses into a series of pulse trains ordered according to their pulse repetition periods, shift register means for rejecting from each pulse train any pulses constituting a harmonic rather than a fundamental signal at the input weighted integrator means for individually integrating said fundamental pulse trains and, scanning means for sampling the integrator means outputs in time sequence.

3,720,872
POWER TRANSMISSION FAULT INDICATOR WITH AUTOMATIC RESET MEANS

Taft Birch Russell, Edison, and John Gracie, Piscataway, both of N.J., assignors to Taft Electrosystems, Inc., Metuchen, N.J.

Filed Sept. 4, 1970, Ser. No. 69,563
Int. Cl. G01r *19/16, 31/02*
U.S. Cl. 324—133 3 Claims

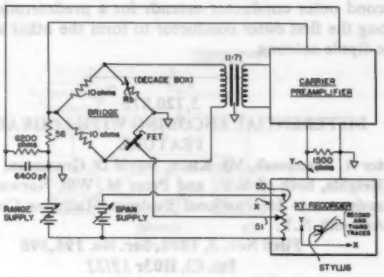


A fault indicator is provided which, in the event of normal power line operation, maintains itself in a status that reflects this normal condition. A surge or abnormal increase in the transmitted current reverses the direction of the current flow in at least a part of fault indicator circuit and causes the indicator to reflect the abnormal condition until the restoration of normal line conditions returns the current flow within the fault indicator circuit to its original direction to reestablish a normal condition indication.

3,720,873
AMPLIFIER SYSTEMS AND MODULATION

Martin J. Morgan, Rochester; William C. Evans, Brighton; Richard A. Rappaport, Henrietta, and Alfred N. Gutzmer, Webster, all of N.Y., assignors to Sybron Corporation

Division of Ser. No. 673,702, Oct. 9, 1967, Pat. No. 3,559,107.
This application Dec. 21, 1970, Ser. No. 100,515
Int. Cl. G01r *31/22*; H03k *17/00*
U.S. Cl. 324—158 T 4 Claims

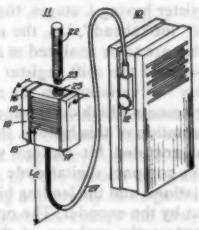


A direct current voltage is applied to the gate electrode of an FET (field effect transistor) to modulate a carrier passing through the FET between its drain and source electrode. The carrier is an alternating current from a fixed amplitude source. The resistance between drain and source of the FET varies in accordance with the amplitude of the modulating voltage, hence, the carrier becomes amplitude modulated thereby. Bias voltage is applied to the FET's gate electrode at the value required for zero temperature coefficient operation of the transistor. Variation in the net gate bias due to the modulating voltage is substantially prevented by negative feedback of the amplified and demodulated carrier voltage to the gate electrode. Further temperature compensation is provided by a zener diode made of the same semi-conductor material as the FET and incorporated in the supply of bias voltage. The bias voltage for zero temperature coefficient operation is determined by means of the relation $R_{ds}G_m=K$, where R_{ds} is the value of the FET's drain-source resistance at the zero temperature coefficient point, G_m is the FET's forward transfer transconductance and K is a constant having the value of about 0.184.

3,720,874
DIPOLE ANTENNA ARRANGEMENT FOR RADIO WITH SEPARATE SPEAKER-MICROPHONE ASSEMBLY

Stanley W. Gorcik, Des Plaines; Richard A. Kamysz, Roselle, both of Ill.; Charles T. Hilton, Jr., and John W. Faltz, both of Fort Lauderdale, Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 8, 1971, Ser. No. 196,433
Int. Cl. H04b *1/04*
U.S. Cl. 325—16 16 Claims



A speaker microphone assembly, used with a portable radio unit containing receiving and transmitting equipment for

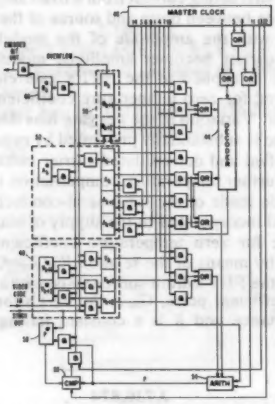
receiving and transmitting radio signals, includes a housing with a helical antenna element mounted to the top wall to form one element of a dipole antenna. A coaxial cable having inner and outer conductors is connected from the portable unit equipment to the speaker microphone housing. The center conductor is connected to the helical antenna and the outer conductor is terminated in the housing at a first point which is ground potential. A second outer conductor surrounds and is insulated from the first outer conductor, and is connected to the first outer conductor at the first point. The second outer conductor extends for a predetermined length along the first outer conductor to form the other element of the dipole antenna.

3,720,875

DIFFERENTIAL ENCODING WITH LOOKAHEAD FEATURE

Peter A. Franaszek, Mt. Kisco; David D. Grossman, Yorktown Heights, both of N.Y., and Peter M. Will, Norwalk, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,398
Int. Cl. H03r *13/22*
U.S. Cl. 325—38 B **8 Claims**



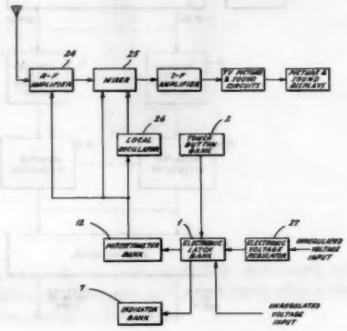
Analog input information is compacted by a differential encoding process that anticipates abrupt transitions in signal levels and initiates compensatory action in time to prevent the encoded representations of such transitions from being shifted out of phase due to slope overload. Digitized analog signal representations which are to be encoded are first passed through a shift register having L stages, the number L signifying the amount of "lookahead", i.e., the number of sampled analog elements that are to be analyzed as a group prior to encoding. The contents of the shift register at any instant will furnish the "history" of variations in the respective levels of the first L signal elements which currently await encoding. By a judicious interpretation of this history, the system is able to select an optimal encoded bit pattern which would most nearly represent in compact digital code form the apparent trend of these variations, and the leading bit or bits of this pattern will be fed out by the encoder. The optimal bit pattern is continually updated as the makeup of the lookahead code group changes. By anticipating rapid changes of level, the phase shift of elements having highly contrasting levels is avoided.

3,720,876

TOUCH-BUTTON ACTUATED ELECTRONIC LATCHING DEVICE WITH MEANS FOR ENSURING LATCH OPERATION UPON THE APPLICATION OF POWER

Andrew P. Montgomery, deceased, late of Glenside, Pa. (by Ann P. Montgomery, executrix), assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed April 28, 1971, Ser. No. 138,211
Int. Cl. H04b *1/06*
U.S. Cl. 325—465 **6 Claims**



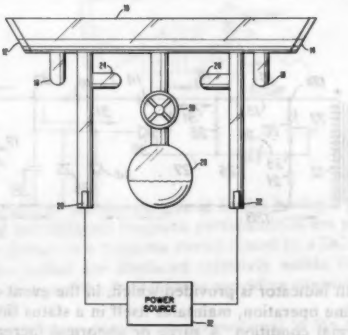
An improvement in the circuits used in touch-button operated electronic latches for tuning voltage variable capacitor tuned UHF television tuners. When a bank of electronic latches operating from a common power source is first energized by the application of input power, all latches will remain in the off state. In the case of a television receiver no signal will be received and the picture and sound displays will contain only noise. The improvement here is the inclusion of circuits that ensure the operation of one latch when power is first applied. This means that when the receiver is first energized it will be tuned to an occupied channel.

3,720,877

METAL VAPOR DISCHARGE TUBE USING METAL AND SEMI-METAL COMPOUNDS IN A DISCHARGE TUBE

Charles B. Zarowin, Tarrytown, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,589
Int. Cl. H01s *3/09*
U.S. Cl. 330—4.3 **3 Claims**



A metal vapor discharge tube device including a discharge tube and means for introducing a metal or semi-metal into the discharge tube without auxiliary heating. The metal or semi-metal is introduced as a compound of a metal or semi-metal

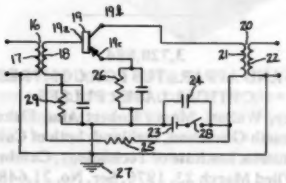
and a non-metallic radical having a vapor pressure greater than one torr at the temperature of the discharge tube (which for most discharge tubes can be as high as about 300° C). The discharge in the tube causes the decomposition of the compound, thereby releasing the metal or semi-metal into the discharge for excitation. If desired, the excitation can produce lasing and the device may be used as a metal vapor laser.

3,720,878

TRANSMISSION LINE IMPEDANCE MATCHING CIRCUIT

Raymond A. Rosenberry, 6645 Rochelle Boulevard, Parma Heights, Ohio

Continuation-in-part of Ser. No. 738,969, June 21, 1968, abandoned. This application May 21, 1971, Ser. No. 145,926
Int. Cl. H03f 3/04
U.S. Cl. 330—12 **7 Claims**



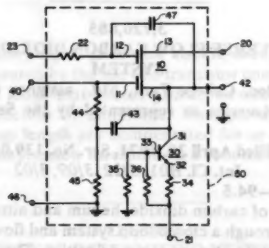
An impedance-matching solid state amplifier circuit for an antenna circuit in which the impedance matching circuit can be connected at either terminus of the transmission circuit or at any point therebetween and in which the amplifier circuit need not be relied upon for any tuning effect as it relies upon the reflected impedance of the load in the matched impedance transmission circuit.

3,720,879

LOW-CAPACITY, HIGH IMPEDANCE CIRCUIT

Randolph A. Reitmeyer, Jr., Oakhurst, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed April 17, 1972, Ser. No. 244,686
Int. Cl. H03f 3/16
U.S. Cl. 330—26 **3 Claims**



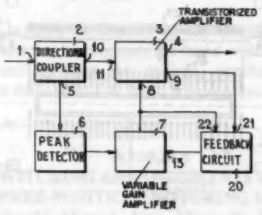
This invention relates to amplifiers and particularly to low-input-capacitance, high-input-impedance amplifiers. More particularly, this invention relates to an amplifier using a dual-gate, field-effect transistor with circuitry for increasing the effective input impedance and reducing the effective input capacitance of the dual-gate field-effect transistor to an extremely low value.

3,720,880

POWER AMPLIFYING DEVICE FOR AMPLITUDE MODULATED HIGH FREQUENCY SIGNALS

Pierre Le Seigneur, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 13, 1971, Ser. No. 188,812
Claims priority, application France, Oct. 3, 1970, 7036925
Int. Cl. H03g 3/30
U.S. Cl. 330—29 **2 Claims**



In a power amplifying device comprising a linear push-pull amplifier the transistors of which are mounted in a common emitter arrangement, the difference between the d.c. supply voltage and the variable peak voltage V_m appearing on the collectors of the transistors for each period of the input signal, is maintained constant through supplying to the amplifier a d.c. supply voltage V_a equal to $V_m + V_D$ where V_D is a predetermined voltage.

This is obtained through detecting the peak values of the input signal by means of a peak detector whose output signal is amplified by an auxiliary amplifier, the output voltage of which is supplied as a d.c. supply to the push-pull amplifier.

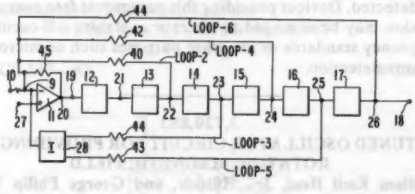
A feedback circuit maintain the relation $V_a = V_m + V_D$ when the gain of the transistors of the push-pull amplifier varies.

3,720,881

FILTER NETWORK HAVING NEGATIVE FEEDBACK LOOPS

Gunnar Hurtig, III, Santa Clara, Calif., assignor to Kinetic Technology, Inc., Santa Clara, Calif.

Filed Jan. 17, 1972, Ser. No. 218,162
Int. Cl. H03f 1/36
U.S. Cl. 330—107 **16 Claims**



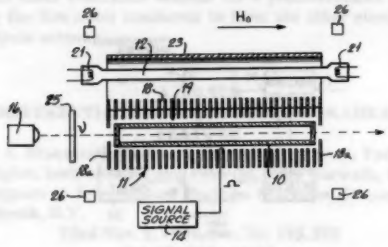
A filter network having an input terminal and an output terminal and a plurality of cascaded filter sections, each section having a designated frequency response, the bandpass or low-pass characteristics of each section being calculated by a formula, and including a plurality of negative feedback loops, one for each filter section except the first, each loop being coupled between the output terminal of the respective filter section and the input terminal of the filter network through a summing means, the gain of each feedback loop being calculated by a formula.

3,720,882

PARAMETRIC FREQUENCY CONVERSION

Henry Tang, and William Happer, Jr., both of New York, N.Y., assignors to Research Corporation, New York, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,389
Int. Cl. H03f 7/00; H03b 3/17
U.S. Cl. 331—3 **15 Claims**



Parametric frequency conversion is effected in a sample of material, such as an alkali vapor, having an energy level system including first and second energy levels with a first transition frequency between them, and a third energy level with a second transition frequency between the third level and one of the first and second levels. The sample of material is disposed in a resonant structure resonating at a frequency substantially equal to the first transition frequency, so as to be within an oscillating electromagnetic field of frequency substantially equal to the first transition frequency, established and maintained by application of a signal to the resonant structure. With a population imbalance between the first and second levels established in the sample as by optical pumping, a carrier beam of energy at a frequency substantially equal to the second transition frequency is directed through the sample. The resonant structure is designed to provide a wavelength within the structure for the field frequency that satisfies a phase-matching condition such that sidebands of the carrier beam are produced by modulation of the index of refraction of the sample, these sidebands differing from the carrier frequency by integral multiples of the field frequency. By appropriate polarizing means, the generated sidebands can be detected, or alternatively, a polarized component of the carrier beam modulated in intensity at the field frequency can be detected. Devices providing this parametric frequency conversion may be arranged to operate as stable, self-oscillating frequency standards or for other purposes such as microwave photon detection.

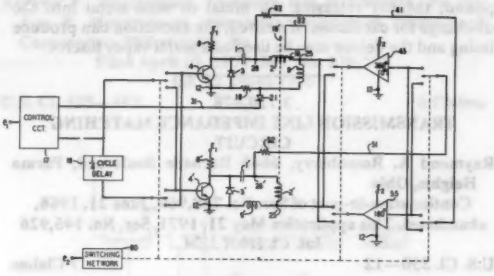
3,720,883

TUNED OSCILLATOR CIRCUIT FOR PROVIDING A ROTATING MAGNETIC FIELD

William Emil Hess, Jr., Hillside, and George Philip Vella-Coleiro, North Plainfied, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 19, 1971, Ser. No. 163,938
Int. Cl. H03b 3/00
U.S. Cl. 331—55 **11 Claims**

A tuned field drive circuit for use in magnetic domain apparatus is provided for generating a reversible, rotating, magnetic field in a plane. The circuit is capable of initiating, maintaining and terminating the rotating field with a predetermined phase and with a field strength envelope having a substantially constant amplitude. The basic circuit includes a high-speed transistor switch, a tuned L-C resonant circuit, and a feedback field current amplifier, for compensating for resistive loss in the resonant circuit. Two of the basic circuits are "slaved" together to form the resultant field drive circuit,



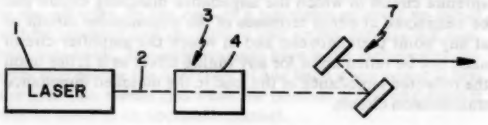
each basic circuit providing one of two normal magnetic vector components comprising the rotating field.

3,720,884

METHOD AND APPARATUS FOR COMPRESSION OF OPTICAL LASER PULSES

Paul L. Kelley, Waban, Mass.; Robert Alan Fisher, Berkeley, and T. Kenneth Gustafson, Oakland, both of Calif., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed March 23, 1970, Ser. No. 21,648
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 **11 Claims**



Short optical radiation pulses (picosecond range) passed through an optical Kerr liquid receive a self-phase-modulation which exhibits a frequency sweep in the region of maximum intensity, the slope in time being proportional to the propagation distance. The phase-modulated pulse from the Kerr cell is directed to a dispersive delay line which delays the higher optical frequencies the least thereby compressing the pulse width. Frequency spreads of the order of 10^3 cm^{-1} are obtainable and hence significant compression ratios are possible, giving rise to very short pulses in the range of 10^{-14} to 10^{-13} sec.

3,720,885

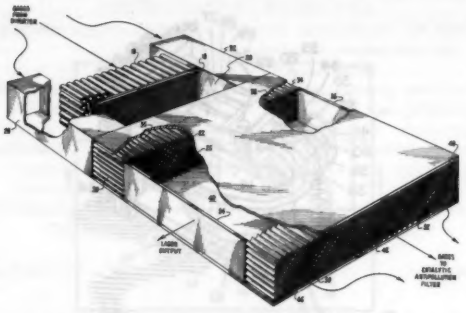
TRANSVERSE FLOW CARBON DIOXIDE LASER SYSTEM

Paul M. Koloc, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 30, 1971, Ser. No. 139,065
Int. Cl. H01s 3/22, 3/09, 3/02
U.S. Cl. 331—94.5 **10 Claims**

A mixture of carbon dioxide, helium and nitrogen gases are circulated through a closed loop system and flow transverse to an optical cavity at near sonic velocities. The gas mixture is cooled by a heat exchanger before entering and upon leaving a compressor. The gas mixture then flows through a gas diverter. A portion of the gas mixture leaving the diverter then flows through a multiple nozzle insulating partition, through a metallic screen, into a pre-ionizing cavity, and into a metallic honeycomb which is aligned with the gas flow. The screen and honeycomb serve as electrodes for an electric field that pre-ionizes the gas and insures a uniform discharge in a flow discharge region. The pre-ionized gas passes through the

metallic honeycomb into the glow discharge region to a second metallic honeycomb. Each honeycomb serves as an electrode for a direct current glow discharge which forms the active laser medium of the optical cavity. Here, the energized gases produce continuous laser action in the optical cavity. The remainder of the gas mixture from the gas diverter flows



across the ends of the optical cavity to cool and electrically insulate the laser end mirrors and confine the glow discharge to the glow discharge region. After the gases pass through the second metallic honeycomb they pass into a catalytic antipollution filter and then to the first heat exchanger, completing the cycle.

3,720,886

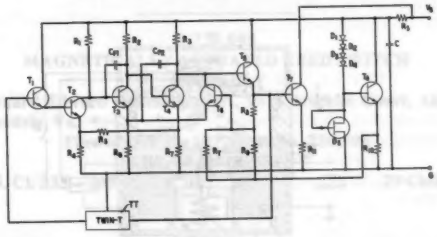
LOW DISTORTION SIGNAL OSCILLATOR

Paul Zuk, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed April 12, 1972, Ser. No. 243,290

Int. Cl. H03b *5/12*

U.S. Cl. 331—110 **10 Claims**



In an oscillatory signal generator circuit, exceptionally low distortion is ensured by the use of a transistor common to multiple feedback loops that causes gain to be compressed as a logarithmic function of amplitude. Changes in output impedance or loop length are compensated for or equalized by shifting the compression threshold as a function of line voltage.

3,720,887

FREQUENCY DETERMINING NETWORK

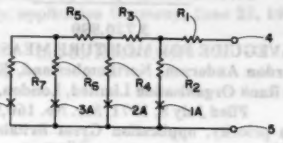
Terence Matthews; Charles N. Gold, both of Kanata, and Michael C. J. Cowpland, Ottawa, all of Ontario, Canada, assignors to Microsystems International Limited, Montreal, Quebec, Canada

Filed Feb. 22, 1972, Ser. No. 228,178

Int. Cl. H03b *5/26*

U.S. Cl. 331—142 **7 Claims**

A frequency determining resistance leg of an oscillator is constructed as a ladder network, each of the resistors having a value relationship to each other defined by a specific set of simultaneous equations related to frequency parameters of the oscillator. The resulting resistor values comprise a ladder network which, when connected to an oscillator through a push



button pad, causes oscillation of the oscillator at predetermined frequencies having specific band widths; but when two adjacent push buttons are pushed, oscillation signals are generated at defined out-of-band frequencies.

3,720,888

DIODE SWITCHING ARRANGEMENTS COMPRISING THREE-POSITION SWITCHING MEANS

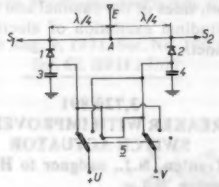
Bertrand Claude Marcel Jean Manuali, Villera-sur-Orge, France, assignor to Centre National D'Eutdes Spatiales, Paris, France

Filed Dec. 22, 1970, Ser. No. 100,685

Claims priority, application France, Dec. 24, 1969, 6944894

Int. Cl. H01p *1/10*

U.S. Cl. 333—7 **2 Claims**



A switching device for HF energy which includes, at a distance of λ/4 from the branching point of one path or circuit into two transmission paths, connections to ground by a switching diode. These diodes may be so biased as to establish communication from the first path to one or other of the two other ones, or to two further transmission paths.

3,720,889

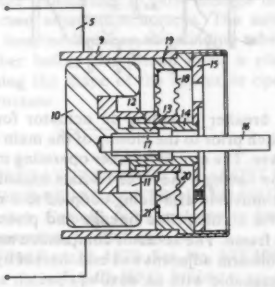
ELECTRON DISCHARGE DEVICES

Frederick Henry Gale, Hillingdon, England, assignor to EMI Limited, Hayes, Middlesex, England

Filed Jan. 9, 1970, Ser. No. 1,747

Int. Cl. H01p *7/06*

U.S. Cl. 333—83 **8 Claims**



An electron discharge device such as a klystron has a cavity resonator tuned by a plunger in a sub-cavity. The sealing of

the sub-cavity is provided by means of a diaphragm which is shielded from electromagnetic energy by part of the choke-forming surfaces of a ditch choke. The shielding surface may be in the form of another diaphragm.

3,720,890

WAVEGUIDE FOR MOISTURE MEASUREMENT

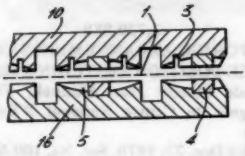
John Gordon Anderson, Northumberland, England, assignor to The Rank Organisation Limited, London, England

Filed July 8, 1971, Ser. No. 160,928

Claims priority, application Great Britain, July 8, 1970, 33,115/70

Int. Cl. H01p 1/00; G01r 27/04

U.S. Cl. 333—98 R 7 Claims



Waveguide for use in moisture measurement comprises two plates with the propagation channel partly formed in each. Preferably both plates have a series of spaced grooves or slots at preferably both sides of the channel and transverse thereto to reduce longitudinal excitation of electromagnetic waves outside the channel.

3,720,891

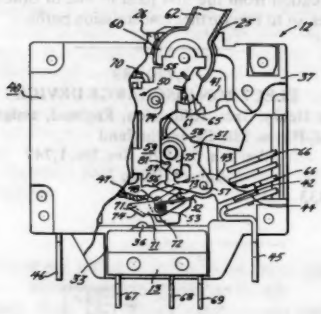
CIRCUIT BREAKER WITH IMPROVED AUXILIARY SWITCH ACTUATOR

Ronald Nicol, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Dec. 6, 1971, Ser. No. 204,850

Int. Cl. H01h 73/12

U.S. Cl. 335—13 13 Claims



A circuit breaker including an actuator for operating an auxiliary switch prior to the closing of the main contacts of the circuit breaker. The circuit breaker operating mechanism is of a known type having a movable contact mounted on a movable arm, the movable arm being coupled to a manual operating handle via a collapsible linkage and pivotally supported from a main frame. The actuator comprises a member coupled to the movable arm adjacent one end thereof by a slotted connection, engageable with an auxiliary switch at its other end depending on the position of the movable arm, and pivotally supported from the circuit breaker main frame intermediate its ends.

3,720,892

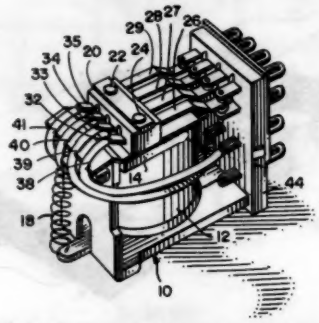
CONSTRUCTION FOR A RELAY

Leon R. Britton, Chicago, Ill., assignor to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed March 9, 1972, Ser. No. 233,074

Int. Cl. H01h 50/00

U.S. Cl. 335—135 1 Claim



A sheet of insulating material is positioned between the contact block and the pivotal armature of a relay. The insulating material extends beyond the pivot axis of the armature and engages the lead wires of the relay to maintain the length of the lead wire between the sheet and contact terminals on the block in a substantially fixed position whenever the armature is pivoted.

3,720,893

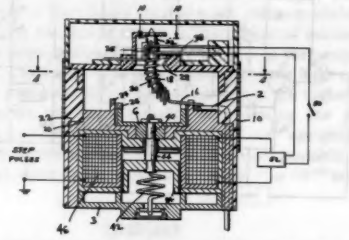
ROTARY SWITCH

Kenneth F. Elliott, Bexley, Kent, England, assignor to GTE International Incorporated, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,312

Int. Cl. H01h 51/08

U.S. Cl. 335—138 3 Claims



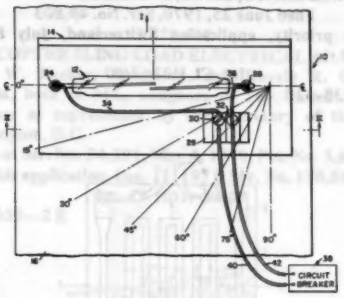
A rotary switch comprising: a plurality of *n* different fixed contacts where *n* is an integer at least equal to 2, said contacts being disposed in spaced position along a circle and designated as the first, second. . . . and *n*th contacts respectively; an electrically conductive wiper extending radially outward from the center of the circle and fixed in position at the center, the opposite end of the wiper making electrical connection with any fixed contact when the wiper is properly positioned; first means responsive to incoming pulses to cause said wiper to rotate through a selected arc each time a pulse is received whereby said wiper can be successively advanced to make electrical connection with each of the first, second . . . and *n*th contacts in turn and thereafter to repeat the sequence as required, said wiper when connected to said first contact being in the home position; a pair of normally closed contacts; and second means responsive to the rotation of the wiper to separate the contact in said pair when and only when the wiper is in home position.

3,720,894

CURRENT MONITORING MEANS

Albert C. Greenwood, Angola, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 3, 1971, Ser. No. 195,343
Int. Cl. H01h *51/28*
U.S. Cl. 335—204 6 Claims



A current monitoring device is disclosed for determining when a known maximum magnitude of direct current has been exceeded. A switching element operatively responsive to a given magnetic flux density vector B_1 to indicate that the maximum direct current has been exceeded, is adapted to be oriented at an angle α_1 (including 0°) with respect to the magnetic flux density vector B_2 resulting from the direct current being monitored. Magnetic shielding is arranged in proximity to the switching element, the degree of proximity determining the magnitude of the magnetic flux B_2 which is diverted from the switching element.

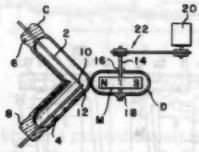
The joint selection of the angle α_1 and the positioning and selection of the magnetic shielding enables a wide range of direct currents to be monitored.

3,720,895

MAGNETICALLY ACTUATED REED SWITCH ASSEMBLY

Bernard Edward Schlesinger, Jr., 9411 Macklin Court, Alexandria, Va.

Filed March 21, 1972, Ser. No. 236,598
Int. Cl. H01h *51/28*
U.S. Cl. 335—205 29 Claims



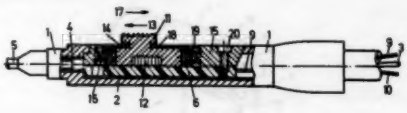
A magnetically actuated reed switch assembly comprising contact means including first and second cooperating magnetically actuated reeds in spaced relation to each other, a permanent magnet rotatable about an axis transverse to the longitudinal axis of the reeds and positioned with respect to the contact means so that its force field at certain positions of its rotation operates to influence the contact means to open or close, the contact means and magnet being encased in a housing assembly including contact and magnet supporting chambers.

3,720,896

HANDLE FOR HIGH FREQUENCY ELECTRODES

Reiner Beierlein, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed May 18, 1971, Ser. No. 144,476
Claims priority, application Germany, June 23, 1970, P 20 30 776.0
Int. Cl. H01h *15/00*
U.S. Cl. 335—206 4 Claims



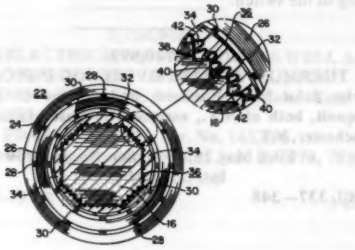
A handle for high frequency electrodes, particularly for use in high frequency surgery has built-in switches for operating a high frequency generator so as to change its outgoing energy, frequency etc. The device is particularly characterized in that contact elements depending from a magnetic field are used as the operating switches and that a permanent magnet is located in the handle.

3,720,897

ELECTRICAL INDUCTIVE APPARATUS

Landis E. Feather, Sharon, Pa., and Louis Morris, Campbell, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1971, Ser. No. 170,005
Int. Cl. H01f *27/08*
U.S. Cl. 336—60 18 Claims



An arrangement for supporting a winding tube of a power transformer. The winding tube is supported and held in position by a supporting structure constructed of rigid plastic foam. Spaces or openings in the supporting structure, which are created by suitably shaped members, permit the liquid dielectric of the transformer to flow through the supporting structure to cool adjacent structures. The suitably shaped members are inserted between the winding tube and its supporting member before the plastic foam is placed therein, thereby defining the shape of the spaces or openings in the supporting structure.

3,720,898

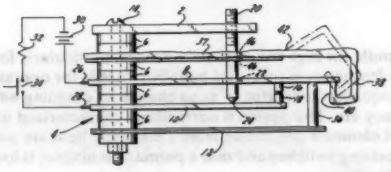
TEMPERATURE-SENSITIVE ASSIST FOR TEMPERATURE-CONTROLLED SWITCH

Robert N. Levinn, Catskill, N.Y., assignor to American Thermostat Corporation, South Cairo, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,301
Int. Cl. H01h *51/34*
U.S. Cl. 337—95 8 Claims

In a conventional type of thermostat the temperature-sensing element, usually in the form of a bimetal strip, acts

against a resiliently loaded switch contact, tending to move that contact to switch-open position against the action of the spring loading thereof. In most instances as the bimetal changes its shape progressively in accordance with changes in temperature, the force exerted thereagainst by the switch contact that it is tending to open will increase, thereby making the bimetal strip work harder and harder as the temperature changes, and in any event the force against which the bimetal works is comparatively great. These are sources of inaccuracy. To eliminate them an additional temperature-sensitive element is provided, one which normally is comparatively inactive on the switch. However, when a temperature is reached which is close to the desired operating temperature of the switch, that element becomes active on the switch with a force which is not strong enough in and of itself to move the switch to open position. Hence the element, when active, will act to assist the bimetal, thereby enabling the bimetal to work against a relatively low opposing force and thus increasing the accuracy with which the bimetal can control the opening and closing of the switch.



3,720,899

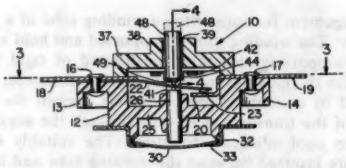
THERMOSTAT WITH OVERLAOD INDICATOR

Charles John Hire, Pittsford, and George C. Luke, Irondequoit, both of N.Y., assignors to Fasco Industries, Inc., Rochester, N.Y.

Filed May 28, 1971, Ser. No. 147,739

Int. Cl. H01h *37/70*

U.S. Cl. 337—348 **8 Claims**



The housing of this thermostat contains a normally closed switch arm, and a bimetallic, temperature-responsive disc, which flexes to open the switch arm and interrupt the associated circuit when the ambient temperature exceeds a predetermined value. An indicator pin, which is mounted to reciprocate in an opening in one end of the housing, may be attached at its inner end to an over-center, snap-acting spring which is mounted in the housing, or the pin may carry a flexible spring member engageable in spaced recesses in the housing. When the metal disc opens the switch arm, the arm shifts the indicator pin outwardly to indicating position against the resistance of the over-center spring, or the flexible spring member, where it is readily viewable. The indicator pin must be manually reset, but the switch are reclosed independently of the indicator pin.

3,720,900

THIN-FILM RESISTANCE THERMOMETER HAVING LOW OHMIC CONTACT STRIPS

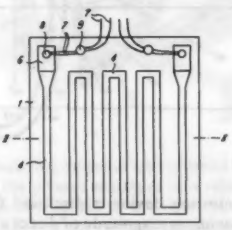
Drost M. Von Bruning, Zurich, Switzerland, assignor to Mettler Instrumente AG, Zurich, Switzerland

Filed June 25, 1970, Ser. No. 49,803

Claims priority, application Switzerland, July 8, 1969, 10425/69

Int. Cl. H01c *7/00*

U.S. Cl. 338—25 **10 Claims**



Temperature-responsive thin-film resistor of the type including a ribbon of resistive material supported on a base layer, characterized in that the composition and cross-sectional dimensions of said resistive ribbon are such as to produce a positive variation in electrical resistance of at least 5 percent per degree Kelvin at any point within a 10° interval up to 30° Kelvin and further that low ohmic contact strips are provided at the ends of the resistive ribbon. Preferably the resistive material is selected from the group consisting of lead, cadmium, indium, thallium, gold and stabilized β-tin.

3,720,901

CONTACTLESS PROGRAM MONITOR

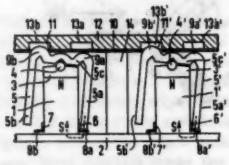
Adolf Albrecht; Ulrich von Borcke; Paul Hini, and Hans Hieronymus, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 30, 1970, Ser. No. 51,046

Claims priority, application Germany, July 19, 1969, P 19 36 900.7

Int. Cl. H01c *7/14*

U.S. Cl. 338—32 R **3 Claims**



A pole shoe is rigidly affixed to one pole of a magnet and a yoke is pivotally mounted on the other pole of the magnet about an axis. The yoke is of substantially inverted U-shaped configuration having a pair of spaced yoke legs joined at one end by a head portion pivotally mounted on the other pole of the magnet in a manner whereby the yoke is pivotable from one stable state to another in a plane formed by the yoke legs.

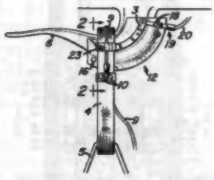
Each of a pair of galvanomagnetic resistors is mounted on the pole shoe on a corresponding side of the magnet in a manner whereby when the yoke is in one stable state one yoke leg thereof is in close proximity with one of the galvanomagnetic resistors and the other yoke leg thereof is spaced from the other of the galvanomagnetic resistors and vice versa. A pair of spaced transmitter members movably mounted adjacent the head portion of the yoke for movement in the plane of the yoke legs controls the pivotal movement of the yoke into a selected one of its stable states.

3,720,902

HELICOPTER SLING LOAD ELECTRICAL ADAPTER

Charles W. Beeker, Baltimore, and Royale R. Crabtree, Towson, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 34,291, May 4, 1970, Pat. No. 3,647,170.
This application Aug. 11, 1971, Ser. No. 170,865
Int. Cl. H01r *39/64*
U.S. Cl. 339—2 R **3 Claims**



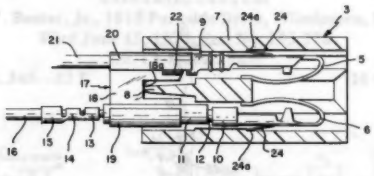
A means for electrically connecting the electrical system of a load means to the electrical power supply of a lifting means.

3,720,903

FILTER ASSEMBLY FOR PRINTED CIRCUIT BOARD CONNECTOR

Ferdinand William Schor, Altedena, Calif., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 27, 1971, Ser. No. 147,570
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **3 Claims**



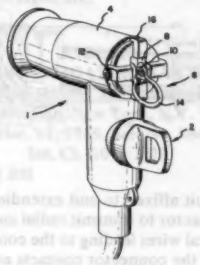
A filter assembly for a printed circuit board connector having spring contacts with crimp barrels for connecting flexible loads. The assembly includes a ground strap having a first curved surface at one side resiliently engaging the crimp barrel of one spring contact connected to a grounded flexible lead. A second curved surface at the other side of the ground strap resiliently engages the exterior (i.e., the ground side) of a cylindrical filter. A connecting pin extending through the filter is engaged by a crimp barrel of an adjacent ungrounded spring contact. By recessing the second curved surface with respect to the first, the second curved surface will not contact the intermediate portion of the strap to receive a wall of the connector housing separating the spring contacts. The filter need not in every instance be connected to a grounded circuit.

3,720,904

SELF-ACTUATING LOADBREAK CONNECTOR

Frederick Carl De Sio, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 4, 1971, Ser. No. 112,646
Int. Cl. H01r *13/52, 13/54, 13/62*
U.S. Cl. 339—34 **10 Claims**



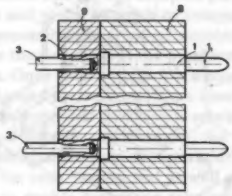
A loadbreak connector having a male contact retractable to a cocked position and positively actuated to an extended position for positive engagement with an associated high voltage connector. Trigger apparatus initially retains the contact in a retracted position. The contact includes venting structure to dissipate and cool arc generating gases evolved upon connection of the contact to the high voltage connector.

3,720,905

PIN FOR ELECTRICAL CONNECTORS AS WELL AS CONNECTORS PROVIDED WITH THIS PIN

Pierre Louis Marie Drogo, 104, rue Garibaldi, Saint Maur (Val de Marne), France

Filed May 21, 1971, Ser. No. 145,806
Claims priority, application France, June 2, 1970, 7020210
Int. Cl. H01r *11/20*
U.S. Cl. 339—97 R **1 Claim**



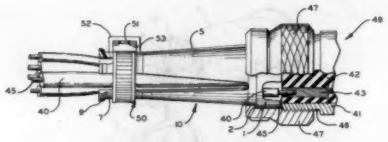
The invention relates to a pin for electrical connectors consisting of a metallic body made of a material which can be deformed by the application of pressure, said body being provided with a cylindrical axial opening for receiving the cable to be connected mechanically and electrically to the pin, this invention is characterized in that the wall of the orifice for receiving the wire comprises at least one rib forming a sharp-angled inner projection, made in the material constituting the pin and placed virtually transversally across the axis of the opening.

3,720,906

ELECTRICAL CONNECTOR WITH EXTENDED CABLE SUPPORT

Stephen Punako, Bainbridge, and George J. Swanson, Sidney, both of N.Y., assignor to the Bendix Corporation, Southfield, Mich.

Filed June 25, 1971, Ser. No. 156,640
Int. Cl. H01r 13/58
U.S. Cl. 339—101 7 Claims



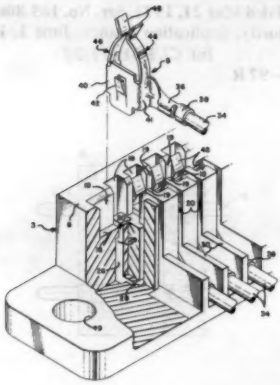
A plastic conduit affixed to and extending from the end of an electrical connector to transmit radial and axial forces, acting on the electrical wires leading to the connector, away from the connection of the connector contacts and electrical wires. The plastic cable support includes a plurality of axial slots that permit the cable support to be compressed into the wires passing through the conduit so that the wires may be retained in a fixed position. The plastic cable support transmits the redial and axial forces away from the connection of the wires to the contacts at least the distance of the cable support.

3,720,907

PANEL CONNECTOR EMPLOYING FLAG-TYPE TERMINALS AND TERMINAL EXTRACTING TOOL FOR THE SAME

John Carl Asick, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 114,793, Feb. 17, 1971, abandoned. This application July 12, 1971, Ser. No. 161,809
Int. Cl. H05k 1/07; H01r 13/12
U.S. Cl. 339—176 MP 14 Claims



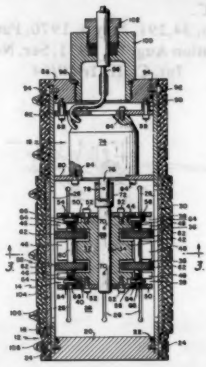
A dielectric block carrying a longitudinally extending trough on one side and a plurality of spaced slots from the same side and intersecting the trough, have the root portions of the slots longitudinally enlarged at one side to define first and second shoulders. A FLAG-type terminal inserted into the trough in the same direction as the subsequently received printed circuit board has a tang within the web portion which contacts the second shoulder to resist removal forces in the plane of card insertion. The flag-type terminal is bent to longitudinally offset the web portion from the wire crimping portion to form an abutment which contacts the first shoulder and resists forces extending along the axis of the wire crimped thereto. A multi-armed extracting tool is inserted within the slot adjacent to the terminal arm for releasing the tang from the second shoulder for extraction of the terminal in the plane of the printed circuit board and in the direction of board extraction.

3,720,908

ELECTROMECHANICAL ACOUSTIC NOISE SOURCE

Bernard J. McCoy, Herndon, Va., and Frank O. Rans, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 3, 1970, Ser. No. 94,925
Int. Cl. H04b 11/00
U.S. Cl. 340—8 R 14 Claims



An acoustic noise source wherein the noise is generated electromechanically by the rotation of a mass within and in rolling contact with a slotted thin-walled cylinder.

3,720,909

DIRECTIONAL HYDROPHONE BUOY SYSTEM

Joseph A. Sikora, Jackson, Mich., assignor to Spartan Corporation, Jackson, Mich.

Filed Feb. 1, 1971, Ser. No. 111,410
Int. Cl. H04b 13/00
U.S. Cl. 340—8 R 11 Claims

A system for supporting a highly sensitive submerged hydrophone sensing underwater sound pressure waves by physical displacement, primarily in the horizontal direction, wherein the hydrophone comprises a buoyant body maintained in a submerged condition by compliant suspension and anchor means. The displaceable hydrophone is relatively lightweight, increasing sensitivity to sound pressures, and the compliant suspension and anchor means employed include elastic strands having a natural resonance frequency significantly less than the hydrophone operating frequency, and im-

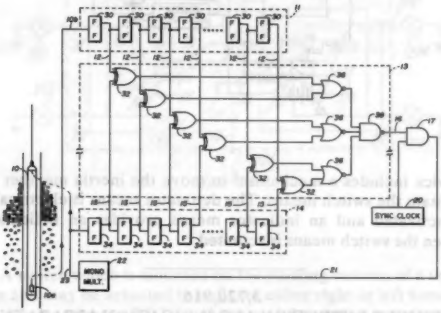
proved sensitivity is achieved due to the low mass and inertia of the hydrophone and adjacent system components.

3,720,910

HIGH RESOLUTION TELEMETRY FOR RANDOM PULSE OUTPUTS

Charles R. McLaughlin, and Jerry B. West, both of Dallas, Tex., assignors to Century Geophysical Corporation, Tulsa, Okla.

Filed Feb. 25, 1970, Ser. No. 13,930
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 R **14 Claims**



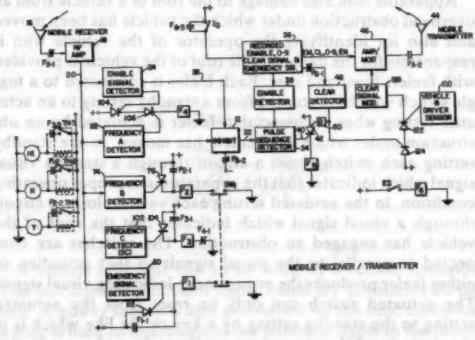
A system for accommodating random pulses having frequencies above the passband of the pulse transmission channel includes a first accumulating register into which the random pulses are fed. A second accumulator register accumulates the output pulse count of the system, and a comparator produces an output level when the counts stored in first and second registers are at a predetermined relation to one another. A synchronizing clock has an output pulse rate within the passband of the pulse transmission channel and controls the output from the comparator according to the pulse rate, such that pulses applied to the pulse transmission channel are uniformly spaced apart at a frequency within the passband of the transmission channel.

3,720,911

MOTOR VEHICLE IDENTIFICATION AND SPEED CONTROL SYSTEM

Troy W. Bomar, Jr., 1015 Parkside Drive, Wilmington, Del.

Filed June 15, 1971, Ser. No. 153,278
Int. Cl. G08b *29/00*
U.S. Cl. 340—52 F **10 Claims**



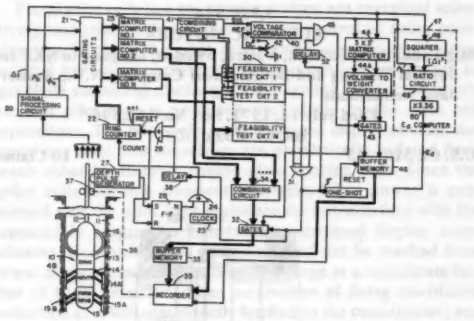
A mobile transmitter/receiver in each motor vehicle and each including a unique identification signal. One or more base stations including a receiver and transmitter which includes means to ascertain the unique identification number of a given vehicle at a given place and time. Systems are provided for ascertaining, along with the identification of the vehicle; its speed or if it is stolen, conditions such as if the vehicle is polluting the air or other maintenance problems; if the driver is intoxicated or has not fastened his seat belt. Also, the same system may be used in signalling the occurrence of an accident or other emergency situation; controlling entry into limited access areas, together with "operating" toll stations in parking lots, on toll roads, bridges, etc.

3,720,912

METHODS FOR INVESTIGATING EARTH FORMATIONS

Arthur W. Schmidt, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 11, 1969, Ser. No. 884,100
Int. Cl. G01v *1/22*
U.S. Cl. 340—15.5 BH **9 Claims**



In accordance with illustrative embodiments of the present invention, measurements of the acoustic travel time, bulk density and hydrogen content of a formation are obtained over a section of a borehole and used to compute parameters relating to coal deposits and to the strength or competence of formations. These measurements are first combined in a 4 × 4 matrix to enable the detection of the presence of an appreciable coal deposit. Once such a deposit is discovered, the travel time and bulk density measurements are combined in a 3 × 3 matrix to provide computed parameters relating to the quality of coal in such a deposit. Additionally, the travel time and density measurements are used to determine the strength or competence of the coal bearing bed as well as adjacent earth formation beds to enable evaluation relating to the construction of a mine.

3,720,913

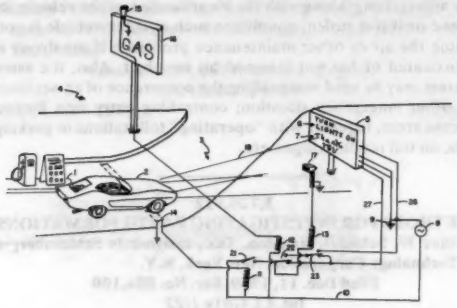
WARNING AND COURTESY DISPLAY SYSTEM FOR MOTOR VEHICLE OPERATORS

Richard H. Bradford, 3206 Edgewood Road, Kensington, Md.

Filed June 25, 1971, Ser. No. 156,888
Int. Cl. G08g *1/09*
U.S. Cl. 340—31 R **5 Claims**

A display for notifying a motorist that his headlights are not on and/or for conveying other courtesy information comprises means for sensing proximity of a vehicle, means for sensing ambient light, and means for sensing illumination from the

vehicle headlights. When a vehicle is present under poor ambient light conditions and headlight illumination is not sensed,



a display advises the motorist to turn headlights on. When illumination is sensed, the display may change to a courtesy message.

3,720,914

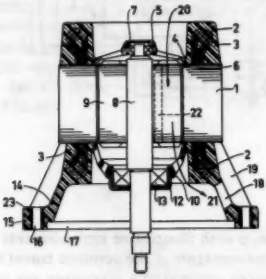
ELECTRIC MOTORS

Stig Lennart Hallerback, Vastra, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed July 14, 1971, Ser. No. 162,596

Int. Cl. H02k *1/04*

U.S. Cl. 310—43 **10 Claims**



An electric flange motor particularly for driving circulation pumps for heating systems and having the mounting flange formed as an extension of a plastic moulding encapsulating the stator windings. The flange is provided with metallic fastening means lacking metallic connection with the stator core, to minimize the transmission of heat from the pump to the motor. Rotor bearing support means are supported by the stator core independently of the plastic moulding.

3,720,915

VEHICLE CRASH SENSOR CONDITION TESTER

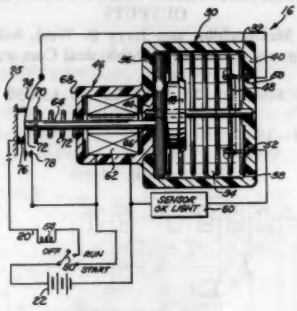
David P. Hass, Detroit, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 6, 1971, Ser. No. 205,078

Int. Cl. G08b *21/00*

U.S. Cl. 340—52 H **11 Claims**

A crash sensor condition tester for use with a sensor assembly employed for actuating a vehicle safety apparatus upon the occurrence of a collision. The sensor assembly includes an inertia member positioned for movement in response to vehicle deceleration of a predetermined magnitude to actuate an electrical switch means. The switch means, in turn, serves to complete an electrical circuit to energize a detonator. This actuates the safety system which employs a confinement which, upon energization of the detonator, is inflated to an expanded condition. The sensor testing



device includes a mechanism to move the inertia member to actuate the switch means. The detonator means is electrically deactivated and an indicator means provides an indication when the switch means is actuated.

3,720,916

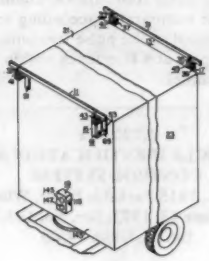
VEHICLE DETECTION AND INDICATION APPARATUS FOR OVERHEAD OBSTRUCTIONS

William H. Edgar, Pittsburgh, Pa., assignor to Exhibitors Service Company, McKees Rocks, Pa.

Filed Oct. 21, 1971, Ser. No. 191,411

Int. Cl. G08b *21/00*

U.S. Cl. 340—61 **11 Claims**

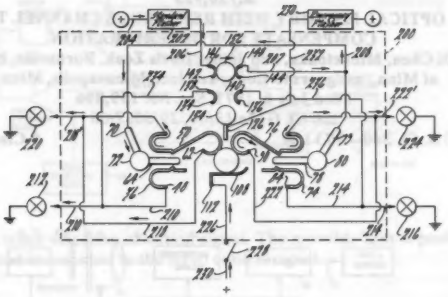


Apparatus indicates damage to the roof of a vehicle from an overhead obstruction under which the vehicle has been moved and also for identifying the operator of the vehicle who is responsible for the damage. The roof of the vehicle is provided with feelers front and rear. Each feeler is connected to a toggle switch which is actuated from a standby setting to an actuated setting when its associated feeler is actuated by an obstruction under which the vehicle has moved. In the standby setting each switch closes a circuit through a standby visual signal which indicates that the apparatus is in proper operating condition. In the actuated setting each switch closes a circuit through a visual signal which indicates that the roof of the vehicle has engaged an obstruction. The switches are connected in parallel to the visual signals so that actuation of either feeler produces the engagement-indicating visual signal. The actuated switch can only be reset from the actuated setting to the standby setting by a key or the like which is in the custody of the supervisor or dispatcher who can assign guilt of causing the damage when he dispatches the vehicles to the next destination.

3,720,917
DIRECTIONAL SIGNAL APPARATUS

Robert M. Dyksterhouse, Blue-Dot Farms, Route 3, Charlevoix, Mich.

Filed Aug. 14, 1970, Ser. No. 63,838
Int. Cl. B06q 1/38
U.S. Cl. 340—67 16 Claims



A switch which is mounted on the steering column of a vehicle and may be actuated to indicate either right or left turn information, right or left lane changing information or emergency information. The switch is transferred to the lane-change or turn mode by an actuator member which moves ball contact assemblies into various contact relations thereby making electrical contact to the various lights of the vehicle. The system also includes a circuit interconnecting the various lamps on the vehicle through a flasher, the energization of the lights being controlled by the turn signal switch. In one case a standard and emergency flasher are utilized and in the other case two standard flashers are utilized and a system is provided to short one of the lamps by means of the flasher thereby giving a sequential affect to the energization of the inboard and outboard lamps.

3,720,918
VEHICLE INDICATOR BELT

Sidney Perl, 13510 Hart Street, Van Nuys, Calif.

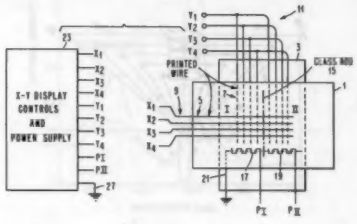
Filed Aug. 12, 1971, Ser. No. 171,125
Int. Cl. B62j 5/00
U.S. Cl. 340—81 R 4 Claims

A vehicle indicator belt to be worn by a vehicle operator. The belt contains indicator lights which are positioned on the belt. A power supply is also positioned on the belt. Electrical wiring is used to interconnect the indicator lights to the power supply through an activating switch. Further, the belt may contain a channel formed by the belt material for use as a housing for the electrical wiring.

3,720,919
PHOTONICALLY PARTITIONED CONTINUOUS GAS ENVELOPE AND TRANSIENTLY ENERGIZED PILOT DISCHARGE AREAS USED IN ADDRESS SELECTION OF DISPLAY FIRING COORDINATES

William Roger Lamoureux, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,126
Int. Cl. H01j 1/00, 7/30
U.S. Cl. 340—166 R 8 Claims

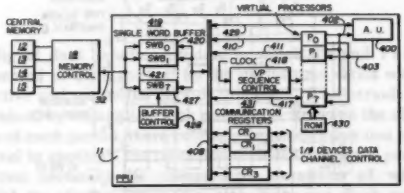


Plural pilot cells in a gas panel envelope are energized selectively and transiently to effect partial control of firing coordinate selection. The pilot cells remain unenergized during normal sustaining periods and firing potentials are chosen to preclude sustaining discharge of pre-ignited unselected points so that pilot bias is produced exclusively by the pilot cell operations. The pilot cells and associated display coordinates receiving pilot bias therefrom are photonically isolated from each other by suitably spaced glass spacing rods. Since the pilot cells are only transiently energized less power is consumed and the pilot light emissions do not interfere with the apparently continuous light at the sustained display coordinates. Hence the pilot emissions need not be masked from view. Since the pilot lights have dual usage as a coordinate factor of firing selection other parameters of firing coordinate selection (i.e. voltages directly applied to the coordinates) and associated selection circuits may be simplified and reduced in size to effect cost and power economies.

3,720,920
OPEN-ENDED COMPUTER WITH SELECTABLE 1/0 CONTROL

William J. Watson, and Edwin H. Husband, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 838,081, Sept. 1, 1969, abandoned.
This application March 1, 1971, Ser. No. 119,861
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 1 Claim

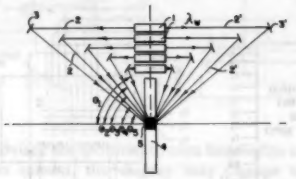


An automatic data processing machine of open-ended construction having communication register units in a peripheral process that are addressable by means of a single instruction in the bit, byte, half-word or full-word level for implementing a broad range of I/O operations.

3,720,921
RECORDING IN REVERSIBLE, PHOTOCHROMIC MEDIUM

Rodman S. Schools, Poughkeepsie, and Glenn T. Sincerbox, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 517,597, Dec. 30, 1965, abandoned. This application July 14, 1970, Ser. No. 56,219
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM **8 Claims**



Interfering radiations of substantially coherent electromagnetic radiation of a wave length within a range to which a layer of photochromic material is sensitive are transmitted in different directions through a layer of the material in selected regions. The interfering radiations in each region produce antinodes which form peak energy levels to sensitize the photochromic material in spaced, parallel surfaces of a periodic structure having altered transmission and reflective properties.

The sensitized regions constituting the recorded information may be read by radiation of a lower energy level or of a wave length outside the range of sensitivity directed to the regions, the reflected radiation being detected to represent the recorded information.

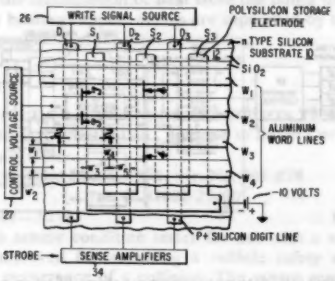
A plurality of interfering beams may be transmitted in different directions in the same region to produce different recordings and may be detected by the same radiations.

The photochromic material may be restored to its original state by radiation of a wave length in a third range, so that such radiation may be used to erase recording in any region.

3,720,922
CHARGE COUPLED MEMORY

Walter Frank Kosonocky, Skillman, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed March 17, 1971, Ser. No. 125,303
Int. Cl. G11c *11/34, 5/04*; H01l *3/00*
U.S. Cl. 340—173 R **4 Claims**

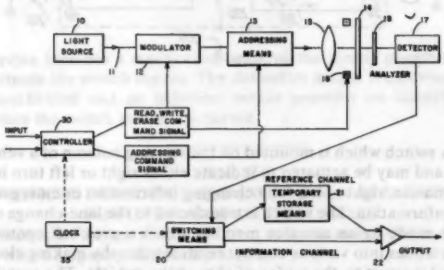


A plurality of storage electrodes, extending in the column direction, each electrode coupled to a common semiconductor substrate at spaced regions along its length, each such region comprising a minority carrier storage location. A plurality of digit lines are formed in the substrate, each such line being coupled to a column of locations. These lines serve as sources of minority carriers and as sense lines. A plurality of word lines extending in the row direction are located one over each row of locations. Each word line can be operated to create conduction channels between the digit lines and the storage locations, respectively, along that word line.

3,720,923
OPTICAL MEMORY WITH REFERENCE CHANNEL TO COMPENSATE FOR DETERIORATION

Di Chen, Minnetonka, and James Davis Zook, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 6, 1971, Ser. No. 159,896
Int. Cl. G11c *13/04, 29/00, 7/00*
U.S. Cl. 340—173 LM **9 Claims**



A beam addressed optical mass memory utilizes an alterable memory medium which exhibits a change in its optical properties as a function of time or as a function of write-rewrite cycles. A reference bit is recorded on the memory medium and one or more information bits are similarly recorded. The reference and information bits are subjected to essentially the same number of write-rewrite cycles, and therefore exhibit essentially identical changes in optical properties. Information is read out by sequentially directing the light beam to the reference bit and the information bits. A detector produces a reference signal indicative of the intensity of the light beam received from the reference bit and produces information signals indicative of the intensity of the light beam from each of the information bits. The reference signal is directed to a reference channel and temporarily stored. Each of the information signals is directed to an information channel. The reference signal is compared to each of the information signals and readout signals are produced which are indicative of the difference between or the ratio of the reference signal and each of the information signals.

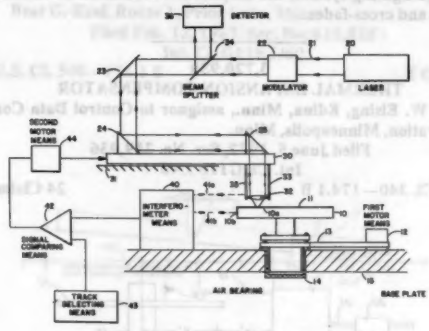
3,720,924
OPTICAL MASS MEMORY

Roger L. Aagard, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed March 9, 1972, Ser. No. 233,200
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM **14 Claims**

An optical mass memory utilizing a rotatable substrate is provided with improved tracking. An interferometer measures the distance between a reflective edge surface on the rotatable substrate and a reflective surface on a movable arm. The final lens for focusing the read-write light beam to a focused light spot on the memory medium is mounted on the movable arm. The electrical signal produced by the interferometer is compared to a track selection signal which is indicative of the desired distance between the reflective edge surface and the

reflective surface, and a servo control signal is produced which is indicative of the difference of the electrical signal and



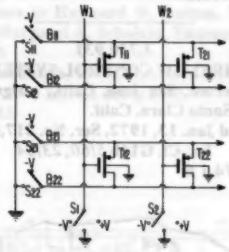
the track selection selection signal. The movable arm is positioned in response to the servo control signal.

3,720,925

MEMORY SYSTEM USING VARIABLE THRESHOLD TRANSISTORS

Edward Charles Ross, Hightstown, N.J., assignor to RCA Corporation, Sommerville, N.J.

Filed Oct. 19, 1970, Ser. No. 81,713
Int. Cl. G11c *7/00, 11/40*
U.S. Cl. 340—173 R **9 Claims**



A word-organized memory array employing at each storage location only a single metal-insulator-semiconductor device. Information is written into selected devices by causing them to assume either a high or a low voltage threshold state while non-selected devices are undisturbed. During the write cycle, the source and drain electrodes of each element are maintained at the same potential having either a first or a second value whereby there is no steady state current flowing through the devices and no steady state power dissipation on the memory array.

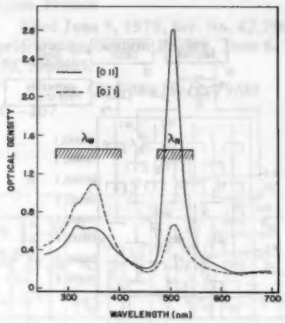
3,720,926

INFORMATION STORAGE USING M COLOR CENTERS IN ALKALI FLUORIDES

Irwin Schneider, 2402 Daphne Lane, Alexandria, Va.

Filed March 31, 1971, Ser. No. 129,709
Int. Cl. G11c *11/34, 13/04;* **G02f** *1/36*
U.S. Cl. 340—173 CC **17 Claims**

Anisotropic color centers, such as M and M_A centers in alkali fluoride crystals such as sodium fluoride (NaF), are used for the storage of information. Polarized optical irradiation is used to align the color centers along discrete crystallographic directions. Reorientation of a center can occur whenever the incident irradiation is of proper wavelength and is absorbed by the center. An information state is related to the particular orientation of the color centers and is subsequently read-out by detecting and interpreting the degree of absorption of incident polarized optical radiation thereon or its induced



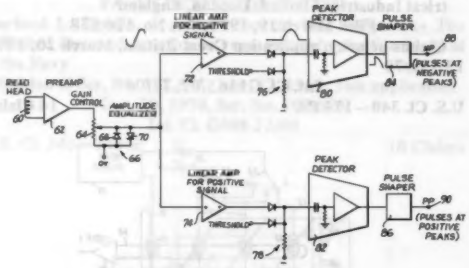
polarized emission. Unlike other materials for which this technique is applied, the operational temperature of the NaF is much higher (above 200°K) than has ever previously been required.

3,720,927

SPEED INSENSITIVE READING AND WRITING APPARATUS FOR DIGITAL INFORMATION

Edgar Wolf, New Hyde Park, N.Y., assignor to Redactron Corporation, Hauppauge, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,521
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 H **13 Claims**



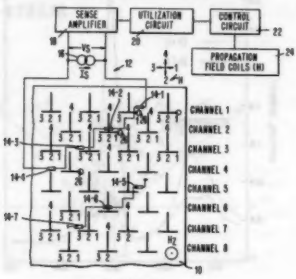
A digital data handling process in which 0's and 1's are represented or distinguished by the use of time ratios within respective and sequential periods in a signal. The periods are determined by sequential clock pulses and, between the clock pulses of each period, there occurs a transition from one voltage level to another. The transition divides the related period into two sections, the comparative durations of which establish the aforesaid ratio. The transitions and clock pulses correspond with the leading and trailing edges of rectangular or square-wave pulses which are magnetically recorded. For reading, the aforesaid durations control the charging and discharging of a capacitor or the counting up and down of a binary counter. The algebraic result of the charging and discharging or counting identifies a 1 or a 0. Reading and writing may be in the same or opposite directions.

3,720,928

SENSING OF CYLINDRICAL MAGNETIC DOMAINS

Hsu Chang, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1971, Ser. No. 145,656
Int. Cl. G11c *11/14, 5/06*
U.S. Cl. 340—174 TF **14 Claims**



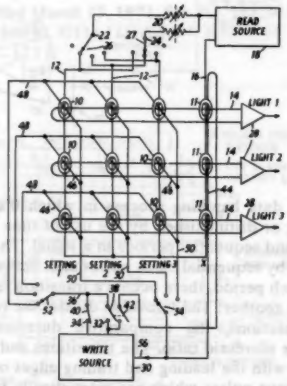
An apparatus for cylindrical magnetic domains in which the sensing elements for detecting the presence and absence of cylindrical domains are spatially staggered in each information channel so as to effect a time phase between successive output signals. In contrast with previous sensing devices for cylindrical domains, an increased number of information channels can be read during each cycle of propagation (the time for a domain to move one bit position). A plurality of information channels is provided on the magnetic sheet, and the sensing means for detection of domains in each channel is staggered spatially with respect to the sensing means in the adjacent channels. A single sense amplifier can be used for all sensing means, and the data rate per channel is correspondingly increased.

3,720,929

MAGNETIC CORE MEMORIES

Ralph Edwin Jones, London, England, assignor to Thorn Electrical Industries Limited, London, England

Filed March 19, 1971, Ser. No. 126,058
Claims priority, application Great Britain, March 20, 1970, 13,738/70
Int. Cl. G11c *5/02, 11/06*
U.S. Cl. 340—174 PA **14 Claims**



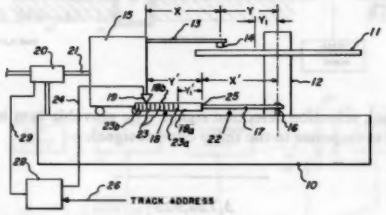
In a magnetic core memory non-destructive read-out is achieved by a read pulse of insufficient amplitude to reset the core to the O state while of sufficient amplitude to induce a significant output for a core in the 1 state, which is preferably not fully saturated. Digital information read out from a matrix memory can be amplitude modulated by varying the amplitude of the read pulses. The memory can be used to control a stage lighting system, the amplitude modulation controlling fades and cross-fades.

3,720,930

THERMAL EXPANSION COMPENSATOR

John W. Elsing, Edina, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed June 5, 1972, Ser. No. 259,936
Int. Cl. G11b *5/48*
U.S. Cl. 340—174.1 B **24 Claims**



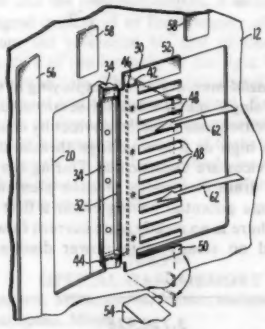
Apparatus for compensating for the thermally induced dimensional variations in an arm carrying the read/write head and the recording disc having tracks on its flat surface which are accessed by the head in storing and retrieving data. The device has expansion members which simulate the dimensional variations in the arm and disc, thereby providing an accurate signal correction.

3,720,931

AIRFLOW CONTROL SYSTEM

William F. Andersen, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Jan. 13, 1972, Ser. No. 217,607
Int. Cl. G11b *5/60, 23/04*
U.S. Cl. 340—174.1 E **6 Claims**



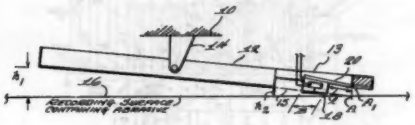
An air circulation control system for a magnetic recording disc drive employing a baffle pivotally mounted near the shroud which encircles the disc pack. A torsion spring holds the baffle in a retracted position against the shroud adjacent to the head access opening in the shroud for insertion and removal of disc packs. Rotation of the disc packs causes air flow across the baffle until the air flow pulls the baffle into the spaces between the discs of the disc pack. Thereafter the baffle causes an air pressure differential around the periphery of the disc pack which is used to pump cooling air through the disc drive.

3,720,932

MAGNETIC RECORDING ARRANGEMENT UTILIZING A GAS FILM BEARING

Robert L. Perkins, 680 Arcadia Drive, St. Paul, Minn., and Beat G. Keel, Route 1, Prior Lake, Minn.

Filed Feb. 13, 1967, Ser. No. 615,825
Int. Cl. G11b 5/60
U.S. Cl. 340—174.1 E 6 Claims



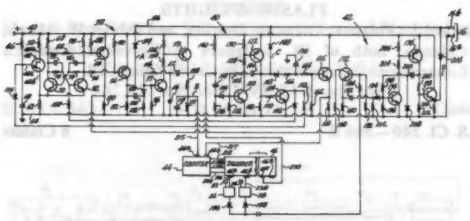
The present disclosure relates to a magnetic recording arrangement utilizing a head assembly which during operation bears on a thin film of gas, such as air, in spaced relationship from a magnetic recording medium. The head itself is positioned at the end of a cantilevered spring arrangement to achieve a very small clearance between the head and the record surface.

3,720,933

SIGNALING SYSTEM WITH SIGNAL LEVEL DIFFERENTIATION

Joseph Schulein, and Joe M. Kortman, both of Vancouver, Wash., assignors to Hayward H. Dutton, Tacoma; Joseph Schulein and Margaret A. Schulein, Vancouver, Wash., part interest to each

Filed July 6, 1971, Ser. No. 159,755
Int. Cl. H04j 3/06
U.S. Cl. 340—183 15 Claims



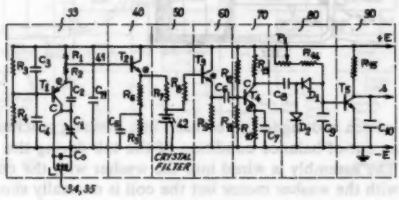
A time-division signaling system employing a transmitter and a receiver which communicate in recurrent operating cycles over a common transmission medium. The transmitter is contructed to transmit during an operating cycle time-spaced interleaved indexing and signaling voltage pulses which differ in respective maximum voltage levels. Discrimination between these two different kinds of pulses at the receiver is made on the basis of a comparison of their respective maximum voltage levels with a reference voltage level which has been generated by preceding pulses. The system includes circuitry which assures synchronization between the transmitter and receiver; and a modification of the system further includes circuitry which prevents the receiver from producing a responsive output to any signaling pulse which is received at the time that the transmitter and the receiver are out of synchronization.

3,720,934

PICK-UP DEVICES FOR DETECTING THE PASSAGE OF A MOVABLE MEMBER OF A SCALE ASSEMBLY OF AN APPARATUS FOR ACCURATELY MEASURING THE SPECIFIC CONSUMPTION OF INTERNAL COMBUSTION ENGINE

Jean Paul Sibeud, Lyon, France, assignor to Automobiles M. Berliet, Lyon, France

Filed June 5, 1970, Ser. No. 43,790
Claims priority, application France, June 6, 1969, 6918802; Feb. 11, 1970, 7004845.
Int. Cl. G08c 19/12, 19/06
U.S. Cl. 340—207 2 Claims



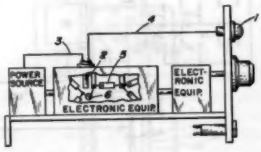
A pick-up device, used with a scale having a pointer movable in front of a dial, the measuring scale carrying a plurality of pick-ups, which comprises a transistorized circuit with a frequency modulated inductance-capacitance circuit, an impedance changer with a quartz filter to which it transmits the oscillator signal, an impedance changer interposed between said filter and an amplifier stage, and transmitting to said stage only the signals generated by said oscillator which correspond to the inherent frequency of quartz, a signal detector rectifying through a doubler the HF voltage having passed through said quartz filter and amplified through said amplifier, and a shaping device for delivering at a low impedance value a high-amplitude logic signal.

3,720,935

FAULT DETECTION SYSTEM

Garland L. Tomlin, Jr., Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy

Division of Ser. No. 832,565, June 12, 1969. This application Dec. 30, 1970, Ser. No. 102,625
Int. Cl. G08b 21/00
U.S. Cl. 340—248 R 10 Claims



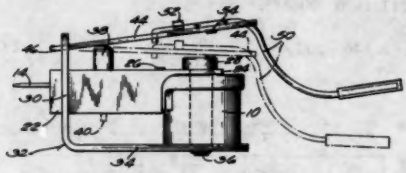
An alarm or fault detection system for in service electronic equipment which is not electrically connected to the equipment. A chemical tracer element which is responsive to the application of a certain force, physical stress, electrical stress, or heat, for example, is embedded in the equipment or portion thereof that is to be monitored. When the equipment's functional tolerance limit of the certain force is reached, the tracer element is released in a gaseous form. Presence of the tracer element's vapors in the equipment enclosure is detected by a transducer which responds to a particular vapor representing a particular component or equipment malfunction and indicates it to an observer.

3,720,936

WARNING SIGNAL RELAY AND SYSTEM

Abed G. Kahale, Roselle; Kenji Yatsushiro, Chicago, and Thaddeus S. Wielgos, Des Plaines, all of Ill., assignor to Controls Company of America, Melrose Park, Ill.

Filed Sept. 3, 1971, Ser. No. 177,799
Int. Cl. G08b 21/00
U.S. Cl. 340—261 5 Claims



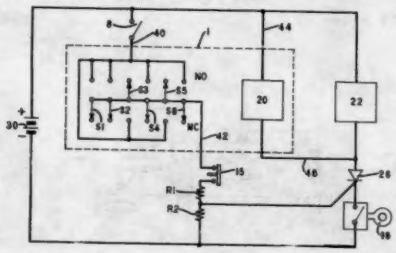
The switch is designed to be used in a washing machine to sense an out-of-balance condition of the tub during the spin cycle. The assembly is wired into the washer with the coil in series with the washer motor but the coil is normally shunted by a switch which is self biased to its "closed" position bridging the coil terminals. In this condition the motor operation is normal. When an out-of-balance tub in a clothes washer bumps the wand projecting from the armature the armature is moved to the core of the coil and actuates the switch plunger to open the switch, thus placing the coil in series with the motor. The relatively high impedance of the coil relative to the motor impedance limits motor current so the motor stops. The A-C supply to the coil causes the armature to vibrate (buzz) giving an audible signal that the washer has stopped due to an unbalanced load. The washer is restored to normal by opening the line switch which de-energizes the coil to thereby release the armature and permit the switch to reclose and restore the coil shunt.

3,720,937

SELF-CONTAINED UNAUTHORIZED ENTRY ALARM

Albert L. Lang, 182 Kendall Road, Kendall Park, N.J., and George A. W. Smith, 916 Beechwood Court, Plainfield, N.J.

Filed July 29, 1971, Ser. No. 167,319
Int. Cl. G08b 13/00, 13/08
U.S. Cl. 340—283 6 Claims



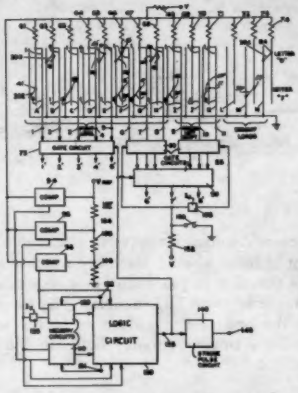
The entry alarm of this invention is especially useful in apartments where ease of installation and removal are highly desirable. Specifically, the invention comprises a battery operated alarm system which is completely contained within a inverted U-shaped assembly designed to fit quite simply over the top of a door and to be held in place with ordinary double-sided tape. The system includes a sensor which sets off a battery operated alarm unless a code-operated device on the outside of the door is correctly manipulated prior to the opening of the door.

3,720,938

SYSTEM FOR PREVENTING ERRONEOUS DATA OUTPUT SIGNALS FROM AN ELECTRICAL KEYBOARD

Wayne V. Leposavic, Saratoga, Calif., assignor to Lematex, Inc., Santa Clara, Calif.

Filed April 19, 1971, Ser. No. 135,076
Int. Cl. H04q 3/00
U.S. Cl. 340—365 S 25 Claims



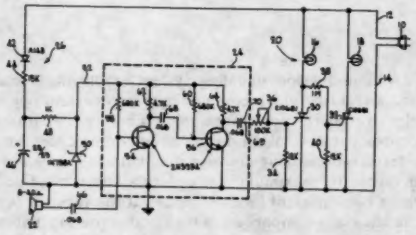
In a mechanically operated keyboard employing keys each having a multiplicity of electrical switch contacts for providing an encoded electrical signal output corresponding to and uniquely identifying individual key stations, an electrical circuit provides a dummy load across the multiple switch contacts which varies as different keys are actuated in a manner to provide a constant load across the multiple switch contacts. The electrical circuit develops a control signal which can be employed in conjunction with associated circuits to inhibit erroneous data output signals from the keyboard in the event of improper switch closure.

3,720,939

AUDIO MODULATED SWITCHING CIRCUIT HAVING FLASHING LIGHTS

Edward L. Polanek, Glendale Heights, and Daniel W. Micek, Chicago, both of Ill., assignors to Universal Research Laboratories, Incorporated, Elk Grove Village, Ill.

Filed March 15, 1971, Ser. No. 124,284
Int. Cl. G08b 5/36
U.S. Cl. 340—366 R 8 Claims

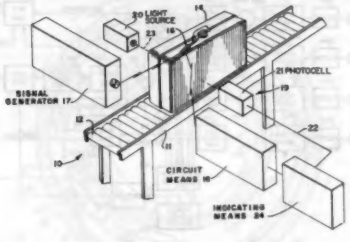


A high sensitivity audio modulated switching circuit operates a plurality of lamps to create various and original lighting effects. The energization of the lamps is controlled by a thyristor circuit which is responsive to both the a.c. line voltage and varying amplified signals from an audio transducer.

3,720,940
METHOD AND APPARATUS FOR SORTING PACKAGES AND THE LIKE

Henry L. Fox, 514 Fountain Street, New Haven, Conn., and Mark Hubelbank, 39 Laurel Street, Somerville, Mass.

Filed Sept. 29, 1970, Ser. No. 76,359
Int. Cl. G01s 9/56
U.S. Cl. 343—6 R 18 Claims

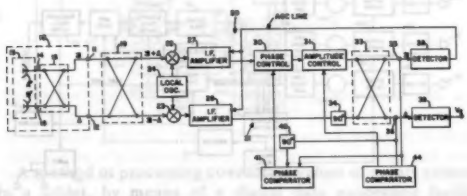


A method and apparatus for detecting the presence of an electrical element responsive to a particular electrical signal and suitable for use, for example, in sorting luggage and the like. In the preferred embodiment, a reradiator responsive to a particular frequency is secured to a tag attached to a piece of luggage. A signal generator is oriented in proximity with the passage of luggage in a baggage conveying system. A circuit is provided which includes a threshold detector for generating a signal when the reradiator responsive to a predetermined frequency passes in proximity to a signal from the signal generator. The circuit includes a digital decoder network for generating an error signal when misdirected luggage intercepts the signal from the signal generator. A package detector unit, including a photoelectric network is included with the circuit to provide an indication that a package was missed when a predetermined combination of input signals was not received by the circuit within a predetermined time after the passage of the package.

3,720,941
AUTOMATIC MONOPULSE CLUTTER CANCELLATION CIRCUIT

Manuel Ares, Manlius, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed April 13, 1970, Ser. No. 27,919
Int. Cl. G01s 9/02
U.S. Cl. 343—7 A 8 Claims

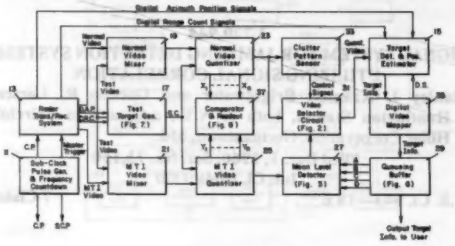


Clutter cancellation is provided in a monopulse radar system by placing a null in the angle response of the radar on the clutter. This is achieved by cross-cancellation of signals as received at two antennas oriented to provide vertically displaced response patterns, the null thus provided being maintained centered on the clutter by operation of control means which adjust the phase and amplitude of one or both of the signals prior to their cross-cancellation. The signal phase and amplitude adjustment means may take any of several different forms but in each case they form part of closed loop controls which optimize the cancellation of clutter returns from received signals while preserving target returns.

3,720,942
VIDEO PROCESSING SYSTEM

Richard D. Wilmot, Yorba Linda; Oscar G. Bradshaw, Garden Grove, and David G. Wiggins, Fullerton, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed March 4, 1971, Ser. No. 120,952
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 21 Claims

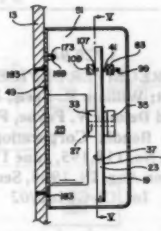

Normal Video Mixer
Normal Video Quantizer
Clutter Pattern Sensor
Target Det. & Pos. Estimator
Radar Trans./Rec. System
Test Target Gen. (Fig. 7)
Comparator & Readout (Fig. 6)
Video Selector Circuit (Fig. 5)
Digital Video Mapper
Sub-Clock Pulse Gen. & Frequency Countdown
M T I Video Mixer
M T I Video Quantizer
Mean Level Detector (Fig. 3)
Quantizing Buffer (Fig. 8)

A system for automatically processing quantized normal and MTI radar video to provide improved clutter rejection and improved detection of moving targets in clutter. The quantized MTI video is applied to a mean level detector, which has its sensitivity controlled as a function of the number of detected target reports being stored in an output buffer unit in order to automatically provide the proper threshold to prevent a data link from being saturated by clutter targets. The quantized MTI video output of the mean level detector and the quantized normal video are applied to a video selector circuit, which is controlled by a clutter pattern sensor for each range bin interval of a radar sweep to automatically select for subsequent detection and processing the MTI video in all range bin intervals having clutter and the normal video in all range bin intervals not having clutter.

3,720,943
VEHICLE ACTIVITY RECORDING DEVICE

William Van Smith, Memphis, Tenn., assignor to Lectrolarm Custom System, Inc., Memphis, Tenn.

Filed April 28, 1972, Ser. No. 248,721
Int. Cl. G01d 9/32
U.S. Cl. 346—7 9 Claims



A device for attachment to a vehicle to record the periods of time in which the vehicle is standing, in motion, and/or certain doors thereof are open or closed. The device includes a marking instrument, e.g., a stylus, which is supported by a vibration sensitive arm. The stylus is in constant engagement with a recording disk. A clock rotatably drives the disk at a predetermined rate. Peculiar helix drive structure is included for gradually moving the stylus ever closer to the center of the disk, which causes the stylus to scribe ever decreasing concentric circles onto the disk, i.e., one circle every 24 hours. When

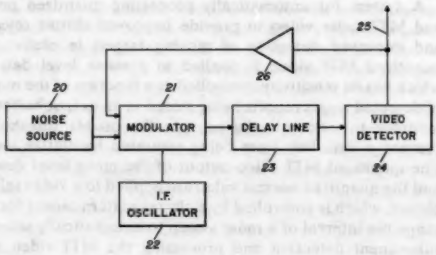
the vehicle is moving, the stylus vibrates up and down. However, structure is included to limit the travel of the stylus as it vibrates, which causes the marks on the disk to correspond to the time in which the vehicle may be traveling, thereby being distinguishable from the time which the vehicle was standing. Structure is included that is responsive to the opening of certain doors of the vehicle which causes the marks on the disk to correspond to the time in which the door of the vehicle may be open, thereby being distinguishable from the time the door was closed.

3,720,944

SIGNAL SYSTEM FOR JAMMING DETECTION SYSTEMS UTILIZING SIGNAL CORRELATION

Stanley I. Kramer, Brightwater and Gordon R. Larsen, Huntington Station, both of N.Y., assignors to Fairchild Hiller Corporation, Germantown, Md.

Filed Dec. 1, 1960, Ser. No. 73,150
Int. Cl. H04k *3/00*
U.S. Cl. 343—18 E **7 Claims**



The invention provides for a method and apparatus for jamming detection systems employing signal correlation devices, wherein a jamming signal may be transmitted. The transmitted signal, which is susceptible of detection by remote detection systems, has a plurality of identical components, at least one of which is displaced in time relative to another. The amount of time displacement may be selectively adjusted or varied to produce false correlations in the remote detecting systems.

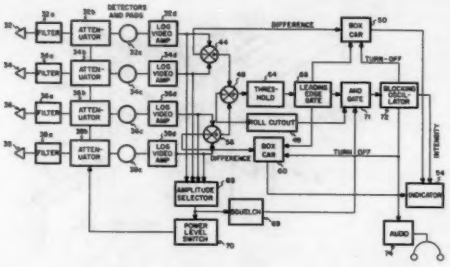
3,720,945

RECEIVER DEVICE

Henry Chow, Detroit; William R. Faris, Berkeley; Howard F. Lynn, Livonia, and Delmar V. Payne, Ferndale, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 118,195, June 19, 1961, abandoned.
This application Aug. 19, 1965, Ser. No. 481,450
Int. Cl. G01s *5/02*
U.S. Cl. 343—114.5 **8 Claims**

1. Apparatus for receiving signals comprising
first locating means for locating a signal direction along one axis,
second locating means for locating said signal direction along a second axis,
said locating means each comprising receiving means connected to amplifying means,
attenuating means to attenuate the signals to said amplifying means in proportion to the signals from said amplifying means thereby increasing the range of said amplifying means,
display means for receiving said signals from said locating means and displaying the source corresponding to said signal,
the received signal being pulsed,
a leading edge gate generator means,



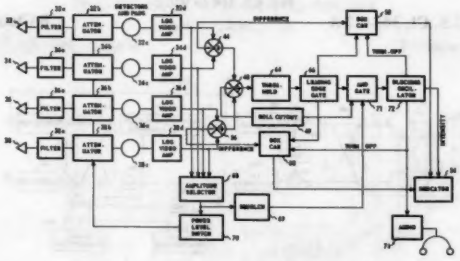
said leading edge gate generator means being between each of said locating means and said display means for sending only the leading edge of the pulse to the display means, thereby minimizing the undesirable effects of reflections of the source of radiation from surrounding objects.

3,720,946

LOGARITHMIC RECEIVER DEVICE WHICH COMPENSATES FOR RECEIVED SIGNAL STRENGTH

Henry Chow, Detroit; William R. Faris, Berkeley; Howard F. Lynn, Livonia, and Delmar V. Payne, Ferndale, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 481,450, Aug. 19, 1965, which is a continuation of Ser. No. 118,195, June 19, 1961, abandoned.
This application Dec. 15, 1966, Ser. No. 602,456
Int. Cl. G01s *3/16*; G06g *7/24*
U.S. Cl. 343—119 **11 Claims**



A logarithmic amplifier for automatically compensating for nonlinear input detectors having a voltage divider network in combination with a plurality of nonlinearly operated transistors. Particularly, the transistors have a control terminal connected to the voltage divider network for receiving logarithmic portions of the input voltage and a common output terminal for summing the outputs of the transistors.

3,720,947

POLARIZATION DEVICE FOR RADAR ANTENNA

William J. Meyer, Glen Burnie, and John H. Staehlin, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 30, 1963, Ser. No. 334,665
Int. Cl. H01q 15/24
U.S. Cl. 343—756 4 Claims

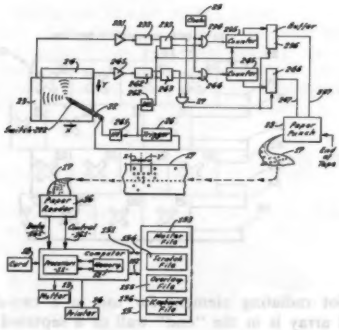
Apparatus for selectively changing the operation of radar antennas to work in either a linear polarization mode, a left-hand circular polarization mode, or a right-hand circular polarization mode.

3,720,948

PROCESSING OF COORDINATE VALUES OF POINTS ENTERED IN A GRAPH BOARD OR THE LIKE

Howard R. Eichen, Fullerton, and Robert H. Paulsen, Placentia, both of Calif., assignors to Co-Data Corporation, Fullerton, Calif.

Filed June 3, 1971, Ser. No. 149,617
Int. Cl. G06f 15/00
U.S. Cl. 444—1 23 Claims



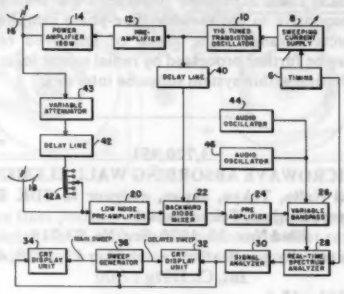
A method of processing coordinate values of points entered in a tablet, by means of a digital data processing facility wherein a first tablet area is operated as alpha numerical keyboard by correlating discrete points entered with keyboard numbers; a second tablet area is operated as a description and encoding board by correlating discrete points entered therein with arbitrarily selected description codes; a third tablet area is operated as a graph board by storing points thereof entered in the third area in spatial relation corresponding to their spatial relation on the graph board; numbers, description codes and graph board points are correlated by means of an algorithm that operates in dependence of the order of entry of points in the first, second and third areas.

3,720,949

VARIABLE RESOLUTION RADAR FOR TROPOSPHERIC SOUNDERS

Juergen H. Richter, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 6, 1970, Ser. No. 26,008
Int. Cl. G01s 9/32
U.S. Cl. 343—14 6 Claims



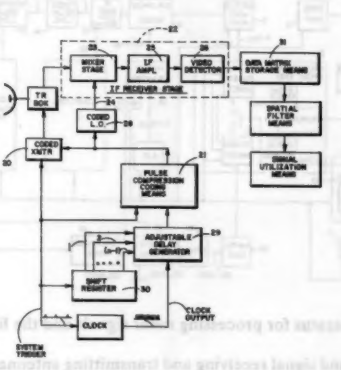
A radar sounder for plotting and studying the refractive structure of atmospheric strata close to the ground is described. The radar comprises means for linearly modulating and vertically radiating a beam of microwave energy. The beat frequency produced in the receiver by the heterodyning of the outgoing with the returning frequencies, is a function of the elevation of the strata from which the reflections occur. Importantly, the degree of resolution of the radar of this invention can be varied from coarse to fine without altering the duty cycle or the total amount of radiated power. Coarse resolution is preferred for searching for the important principal refractive layers from ground to high altitude, while fine resolutions is necessary for examining the fine structure of the selected layer. Of extreme importance is the ability of the radar sounder of this invention to observe structures close to the ground as this is the range where refractive index variations are the greatest.

3,720,950

TIME-DOMAIN CORRELATOR FOR SPATIAL FILTERING IN A PULSED ENERGY SYSTEM

Charles L. Vehrs, Jr., Anaheim, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Nov. 28, 1967, Ser. No. 686,113
Int. Cl. G01s 9/233
U.S. Cl. 343—17.2 PC 27 Claims



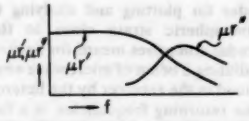
A pulse compression coded type pulsed energy system having time-domain correlation means permitting narrow-band

processing of wide band receiver signals without comprising the data resolution limits thereof. Local oscillator injection means provides a coded periodic sampling signal at a local oscillator input of an intermediate frequency receiver, the sampling periodicity of which sampling signal is substantially less than the system pulse repetition interval and the coding of which sampling signal is a replica of that transmitted by the pulsed energy system. The time-phase of the sampling periodicity of the sampling signal is discretely progressively varied each pulse repetition interval. Data matrix storage means responsive to the variable time-phase sampling signals reconstructs a range trace signal of improved resolution, which may be further processed by radial extent logic to effect spatial filtering within system subpulse intervals.

3,720,951
MICROWAVE ABSORBING WALL ELEMENT

Yoshiyuki Naito, Tokyo, Japan, assignor to TDK Electronic Company, Limited, Tokyo, Japan

Filed Nov. 30, 1970, Ser. No. 93,710
Claims priority, application Japan, May 11, 1970, 45/40410
Int. Cl. H01g 17/00
U.S. Cl. 343—18 A **3 Claims**



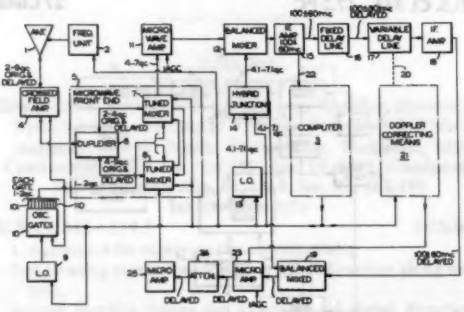
This invention provides a thin microwave absorbing wall member using a ferrite plate of which complex permeability is represented substantially by a formula:

$$\dot{\mu}_r = 1 + \frac{K_{relax}}{1 + (jf\tau)^{\beta}}$$

3,720,952
SIGNAL PROCESSING APPARATUS

Leo Lawsine, 807-South Barton Street, Arlington, Va.

Filed Dec. 29, 1964, Ser. No. 421,826
Int. Cl. H04k 3/00
U.S. Cl. 343—18 E **4 Claims**



1. Apparatus for processing radar signals and the like, comprising

wideband signal receiving and transmitting antenna means;

circulator means having a first terminal connected with said antenna means, said circulator means including also second and third terminals;

a first tuned microwave mixer set including a first directional filter, a plurality of first directional filter mixer units each tuned to a different discrete frequency band, and first manifold means connecting said first mixer units with said first directional filter;

a second tuned microwave mixer set including a second directional filter, a plurality of second directional filter mixer units corresponding in number with said first mixer units and being tuned to the corresponding frequency bands thereof, respectively, and second manifold means connecting said second mixer units with said second directional filter;

first common conductor means connecting the mixture units of the first set with the second terminal of said circulator means, said first conductor means containing series-connected series-connected switch;

second common conductor means connecting the mixture units of the second set with the third terminal of said circulator means;

local oscillator signal generator means;

first gate means connecting said signal generator means with all of the mixer units of said first set;

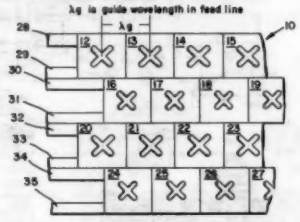
a plurality of second gate means connecting said signal generator means with the mixture units of said second set, respectively;

and signal processing means having input and output terminals connected with the directional filters of said first and second sets, respectively, for controlling the operation of said switch and of said first and second gating means as a function of the inherent characteristics of signals received by said antenna means and for returning to the directional filter means of said second set a modified facsimile signal.

3,720,953
DUAL POLARIZED SLOT ELEMENTS IN SEPTATED WAVEGUIDE CAVITY

James S. Ajioka, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 2, 1972, Ser. No. 222,787
Int. Cl. H01q 13/10
U.S. Cl. 343—771 **15 Claims**



A slot radiating element for use in a two-dimensional phased array is in the "end" wall of a septated waveguide which is stepped-down in back of the radiating element to allow for excitation by means of reduced-height waveguide, stripline, coaxial line or other feeding networks without requiring additional vertical or horizontal spacing between the radiating elements. The radiating element constitutes a crossed or vertical slot or circular hole in the end wall centered over the septum with an additional slot in the septum extending into the cavity from the radiating element to excite the horizontal component (component in the plane of the septum) of polarization. Opposite sides of the septum are excited in antiphase (odd mode) to cause excitation of an electric field parallel to the septum in the radiating slot or hole and are fed in-phase (even mode) to cause excitation of an electric field perpendicular to the plane of the septum in the radiating element. Thus, polarization of the radiating slots or hole and,

hence, the antenna is controlled by controlling the phase and/or amplitude relationship between the two excitations. In view of the arbitrary height of the slotted end wall, arrays can be stacked close enough to allow the capability of being scanned by phase shift in that plane, without formation of grating lobes.

ERRATUM

For Class 346—7 see:
Patent No. 3,720,943

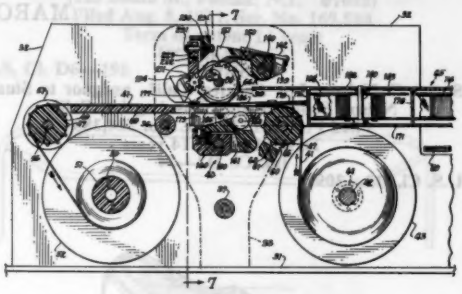
3,720,954

RECORDING DEVICE

Chester S. Czyryk, Silver Lake, Wis., assignor to Mangood Corporation Chicago, Ill.

Filed Feb. 4, 1972, Ser. No. 223,662
Int. Cl. G01d 9/02
U.S. Cl. 346—106 20 Claims

A device for periodic recording of traffic flow on roads or of liquid level of a river by printing on paper tape the positions of a set of counter print wheels of a mechanical counter that is driven in response to vehicular traffic or to a change in liquid level. As a traffic counter the device provides automatic periodic resetting of the wheels to zero. A novel, disposable printing ribbon cartridge permits construction of the device with rigid support, by spaced vertical plates secured to each other and a base plate, of both ends of the counter as well as of an assembly of print rolls to improve printing while avoiding threading of the ink ribbon. A corelator-locking mechanism of



the device fixes position of the wheels during printing. A one-piece counter wheel, with a pawl mounted in it for resetting to zero, provides more rigid faces for the decagonal periphery.

ERRATUM

For Class 444—1 see:
Patent No. 3,720,948

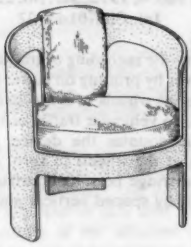
DESIGNS

MARCH 13, 1973

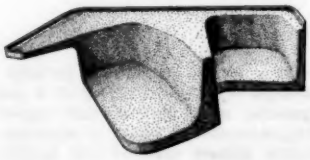
226,461
SHOE
Stuart C. Nelson, Los Angeles, Calif., assignor to Stuart Nelson Footgear, Inc., Los Angeles, Calif.
Filed Feb. 7, 1972, Ser. No. 224,383
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

226,462
HAND HELD FLUID DISPENSER AND BRUSH FOR CLEANING UPHOLSTERY OR THE LIKE
Kenneth E. Gibbs, Wyoming, Mich., assignor to Bissell Inc., Grand Rapids, Mich.
Filed May 5, 1971, Ser. No. 140,648
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—7

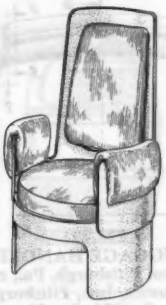
226,463
CHAIR
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed May 19, 1971, Ser. No. 145,118
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—55



226,464
MULTIPLE SEATING UNIT
Donald Michael Genaro, Haworth, N.J., John Niel McGarvey, Drexel Hill, Pa., and Frederick Allen Rosebrock, Greenfield, Ind., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
Filed July 16, 1971, Ser. No. 163,557
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—59

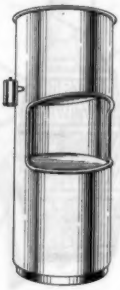


226,465
CHAIR
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed May 19, 1971, Ser. No. 145,092
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69

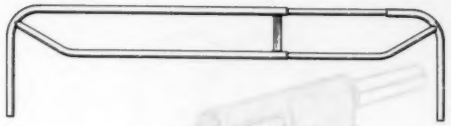


226,466
PEN AND PENCIL COMBINATION
Harold F. Bajusz, 379 Innes Road, Woodridge, N.J. 07075
Filed May 14, 1971, Ser. No. 143,730
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B

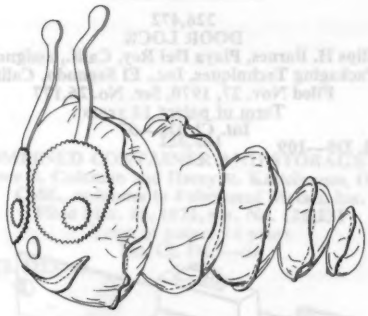
226,467
ILLUMINABLE TELEVISION SUPPORT AND ROOM DIVIDER
Walter J. Edwards, Donelson, Tenn., assignor to King of the Road Enterprises, Inc., Nashville, Tenn.
Filed Feb. 12, 1971, Ser. No. 115,151
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181



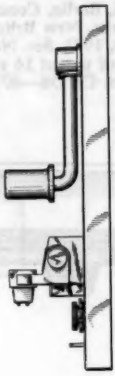
226,468
BEDSIDE RAIL
Morton I. Thomas, Monroe, N.Y. (125 South St., Passaic, N.J. 07055)
Filed Aug. 5, 1971, Ser. No. 169,598
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198



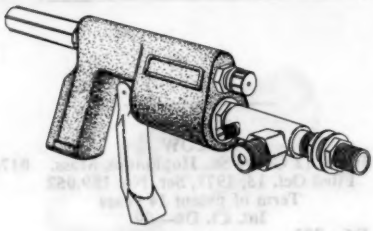
226,469
PILLOW
Paula Hurd, 12 Grove St., Hopkinton, Mass. 01748
Filed Oct. 13, 1971, Ser. No. 189,052
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—203



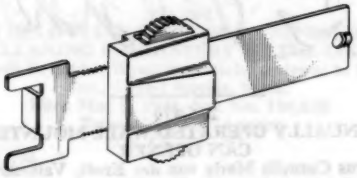
226,470
MANUALLY OPERATED WALL MOUNTED CAN OPENER
Theodorus Cornelis Marie van der Kroft, Valkenswaard, Netherlands, assignor to Van Elderen's Metaalwarenfabriek "Brabantia" N.V., Aalst, Netherlands
Filed Feb. 22, 1971, Ser. No. 117,865
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D8—37



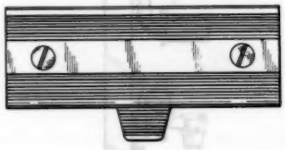
226,471
TOOL FOR CLEARING BLOCKED PIPES
Jack Samuel Conn, Surrey, England, assignor to Surrey Steel Components Limited, Richmond, England
Filed May 24, 1971, Ser. No. 146,595
Term of patent 7 years
Int. Cl. D8—*05*
U.S. Cl. D8—68



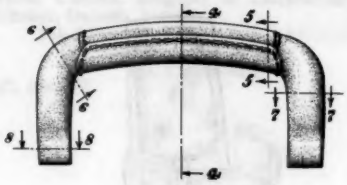
226,472
DOOR LOCK
Phillips H. Barnes, Playa Del Rey, Calif., assignor to Packaging Techniques, Inc., El Segundo, Calif.
Filed Nov. 27, 1970, Ser. No. 26,177
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—109



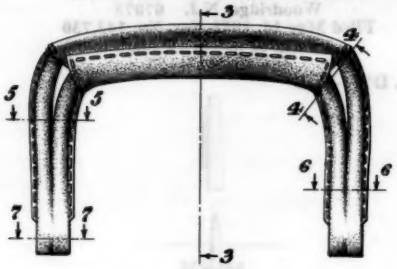
226,473
DOOR BOLT LOCK
Louis G. Bobrowski, Berlin, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Sept. 9, 1971, Ser. No. 179,255
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—131



226,474
LUGGAGE HANDLE
Bela G. Szabo, Pittsburgh, Pa., assignor to Bruce Plastics, Inc., Pittsburgh, Pa.
Filed May 5, 1971, Ser. No. 140,650
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154



226,475
LUGGAGE HANDLE
Bela G. Szabo, Pittsburgh, Pa., assignor to Bruce Plastics, Inc., Pittsburgh, Pa.
Filed May 7, 1971, Ser. No. 141,451
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154

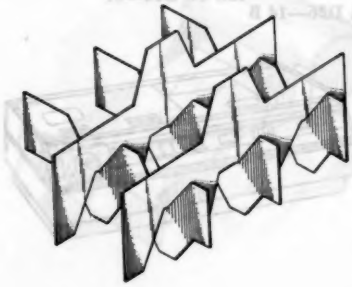


226,476
BOTTLE
Howard Cooper, Suite 7707, 175 E. Delaware, Chicago, Ill. 60611
Filed Jan. 8, 1971, Ser. No. 105,150
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—28

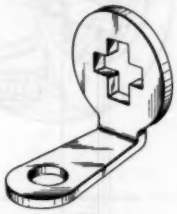
226,477
BOTTLE
Howard Cooper, Suite 7707, 175 E. Delaware, Chicago, Ill. 60611
Filed Nov. 18, 1971, Ser. No. 200,288
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—39

226,478
TRAY FOR RELEASABLY ENGAGING A RAZOR AND A BLADE CARTRIDGE DISPENSER
Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of design application Ser. No. 191,952, Oct. 22, 1971. This application Dec. 2, 1971, Ser. No. 204,413
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186

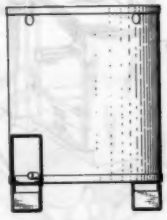
226,479
CARTON PARTITION UNIT
Thomas L. Flanagan, Killingworth, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Apr. 5, 1971, Ser. No. 131,573
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



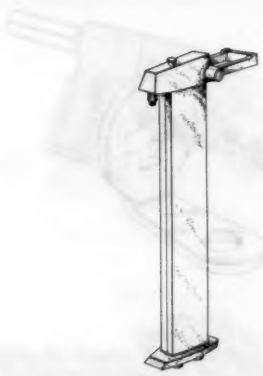
226,480
GUNSIGHT
Richard Mauro, 2326 Powell Ave., Bronx, N.Y. 10462
Filed May 23, 1972, Ser. No. 256,208
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—8



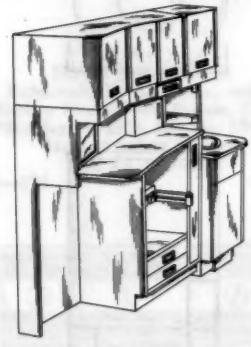
226,481
COMBINED CONTAINER AND STORAGE BIN
Clarence B. Coleman and Harry R. Kattelmann, Oakland, Calif., assignors to Fabricated Metals, Inc.
Filed Mar. 25, 1971, Ser. No. 128,231
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



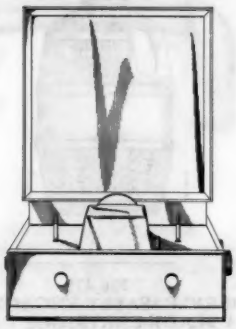
226,482
FROSTPROOF HYDRANT
Miroslav Uroshevich, Cincinnati, Ohio, assignor to Murdock Inc., Cincinnati, Ohio
Filed May 13, 1971, Ser. No. 143,287
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—12



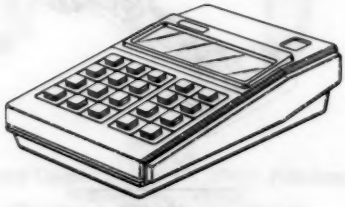
226,483
MODULAR CONSOLE FOR A DENTAL OPERATORY
John M. Schwartz, Des Moines, Iowa, assignor to Den-Tal Ez Mfg. Co., Des Moines, Iowa
Filed Feb. 7, 1972, Ser. No. 224,384
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 B



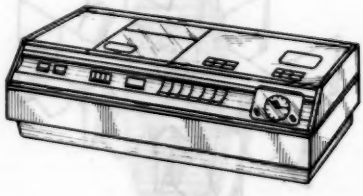
226,484
MICRO FILM READER
Ronald James Purvey, Birmingham, and Raymond Blackwell, Axminster, England, assignors to Group Six Limited, Alperton, Wembley, England
Filed Apr. 26, 1971, Ser. No. 137,737
Term of patent 3½ years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



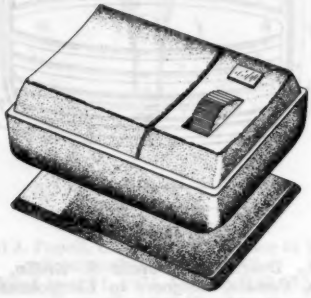
226,485
ELECTRONIC CALCULATING MACHINE
Isao Kitai, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 4, 1971, Ser. No. 195,900
Claims priority, application Japan July 26, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



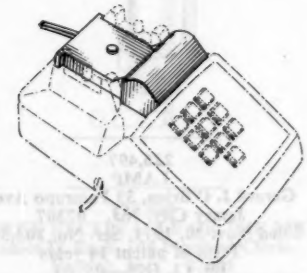
226,486
VIDEO CASSETTE RECORDER
Hendrik Maria Vananderoye, Hasselt, Belgium, assignor to U.S. Philips Corporation
Filed May 18, 1971, Ser. No. 144,710
Claims priority, application Belgium Nov. 20, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

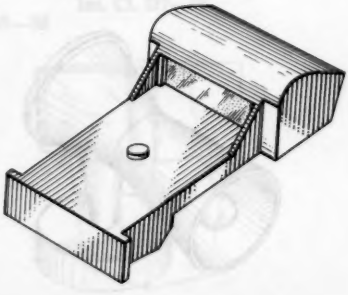


226,487
COMBINATION MICROPHONE AND CONTROL STAND FOR A LOUDSPEAKING TELEPHONE SET
Donald Michael Genaro, Haworth, N.J., and George Willis Reichard, Jr., Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 5, 1971, Ser. No. 186,829
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

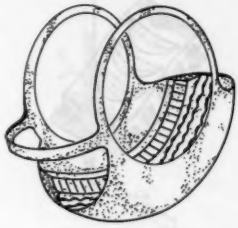


226,488
EMERGENCY TELEPHONE LIGHT
Fred G. Sinclair, 800 NE. 155th Terrace, North Miami Beach, Fla. 33162
Filed Mar. 16, 1972, Ser. No. 249,490
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



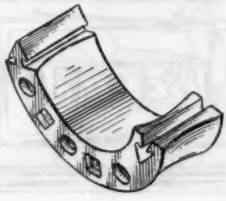


226,489
SWING SEAT OR THE LIKE
Howard B. Kimble, 3100 Arrowwood Drive, Raleigh, N.C. 27604
Filed Mar. 10, 1971, Ser. No. 123,128
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 M



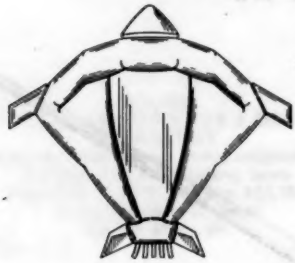
226,490
SKI
Robert Mimeur, Cluses, France, assignor to Etablissements Carpano et Pons, Cluses, France
Filed Feb. 3, 1972, Ser. No. 223,407
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D

226,491
TOY CONSTRUCTION PIECE
John P. Hancovsky, Shaler Township, Allegheny County, Pa., assignor to Hi-Ho Products, Inc., Sharpsburg, Pa.
Filed May 18, 1971, Ser. No. 144,711
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



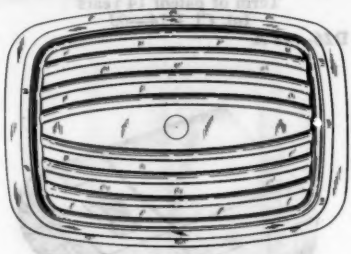
226,492
TOY CONSTRUCTION PIECE
John P. Hancovsky, Shaler Township, Allegheny County, Pa., assignor to Hi-Ho Products, Inc., Sharpsburg, Pa.
Filed May 18, 1971, Ser. No. 144,714
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG

226,493
INFLATABLE KITE
Calogero Madonia, 6250 E. 36th St., Tulsa, Okla. 74135
Filed Oct. 28, 1971, Ser. No. 193,614
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AF



226,494
DIGITAL CLOCK-LAMP
Jack Bergman, Pitsburgh, Pa., assignor to Pennwood Numechron Co., Pittsburgh, Pa.
Filed July 29, 1971, Ser. No. 167,547
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

226,495
TRAY OR THE LIKE
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Nov. 2, 1971, Ser. No. 195,069
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1 B



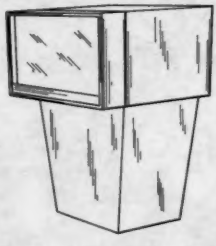
226,496
LAMP
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Mar. 26, 1971, Ser. No. 128,644
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R

226,497
LAMP
Gerard J. O'Brien, 33 Pamrapo Ave., Jersey City, N.J. 07307
Filed Nov. 30, 1971, Ser. No. 203,503
Term of patent 14 years
Int. Cl. D26—*05, 03*
U.S. Cl. D48—20 F

226,498
LAMP
John J. Misenko, 6179 Stratford Drive, Parma Heights, Ohio 44130
Filed Dec. 1, 1971, Ser. No. 203,950
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 C

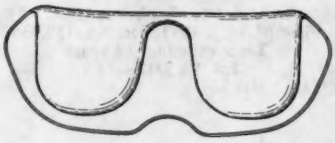
226,499
WRINGER MOP
Samuel J. Popeil, Chicago, Ill., assignor to Popeil Brothers Inc., Chicago, Ill.
Filed June 11, 1971, Ser. No. 152,477
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D49—21

226,500
REFUSE RECEPTACLE OR THE LIKE
James D. Ezell, 108 Pineland Circle, Raleigh, N.C. 27601
Filed Feb. 16, 1972, Ser. No. 227,009
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—35

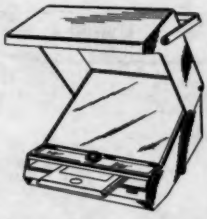


226,501
TIRE MEASURING GAUGE OR SIMILAR ARTICLE
Samuel A. Walker, 10504 Solta, Dallas, Tex. 75250
Filed July 21, 1971, Ser. No. 164,973
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 E

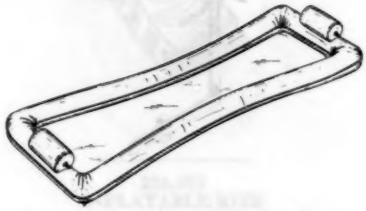
226,502
EYEGLASSES CASE
Heihachi Hori, 430 Shimoishihara Chofu-shi, Tokyo, Japan
Filed May 3, 1971, Ser. No. 140,009
Claims priority, application Japan Feb. 17, 1971
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



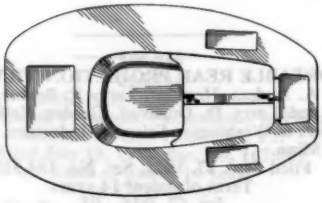
226,503
PORTABLE REAR PROJECTION VIEWER
William A. Andres, Hopkins, Larry F. Becker, Brooklyn Park, and Larry D. Quanrud, Golden Valley, Minn., assignors to Washington Scientific Industries, Inc., Long Lake, Minn.
Filed Sept. 27, 1971, Ser. No. 184,312
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N



226,504
COMBINED PNEUMATIC RAFT AND SUN BATHING SUPPORT STRUCTURE
Willard S. Norton, 5680 NE. Oaktree Lane, Kansas City North, Mo. 64104
Filed May 10, 1971, Ser. No. 142,121
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1 HH

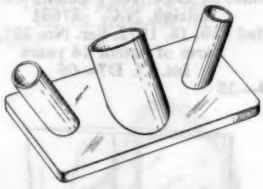


226,505
FISHING FLOAT
Hubert L. McIntyre, Tonkawa, Okla. 74653
Filed May 17, 1971, Ser. No. 150,939
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1 HH

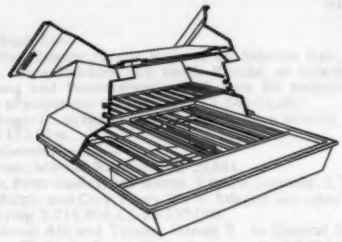


226,506
SWIMMING FLOAT
Edward F. Brill, Oconomowoc, Wis., assignor to Beach-Buoy, Inc., Oconomowoc, Wis.
Filed Sept. 24, 1971, Ser. No. 183,750
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D71—1 HH

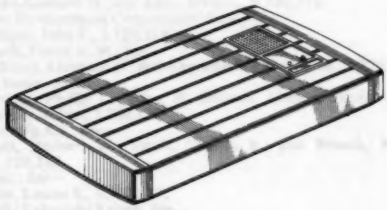
226,507
SUPPORT FOR ROADWAY WARNING DEVICES
Travis R. Wright, 80 Miller Ave., Dayton, Ohio 45427
Filed Sept. 29, 1971, Ser. No. 184,981
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 H



226,508
SMOKE DETECTOR
Channing W. Gilson, Los Angeles, Calif., assignor to A-T-O Inc., Willoughby, Ohio
Filed Jan. 20, 1972, Ser. No. 219,604
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D72—1 R



226,509
ELECTRIC BARBECUE GRILL AND OVEN COMBINATION
Charles D. Dushek, Lisle, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed May 18, 1971, Ser. No. 144,715
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10 E



226,510
COMBINED HAIR DRYER AND STYLING ATTACHMENT THEREFOR
John L. Benty, Maplewood, and Daniel Friedman, Edison, N.J., assignors to Clairol Incorporated, New York, N.Y.
Filed Oct. 12, 1971, Ser. No. 188,400
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F

LIST OF PATENTEES

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Blackney, Raymond. Oscillating steam engine. 3,720,139, Cl. 91-176.000.
Blackwell, Willis A.: *See—*
Riesbeck, Laverne J.; and Blackwell, Willis A., 3,720,316.
Blanchard, Vernon F. Adjustable work stop for turning machine. 3,720,416, Cl. 279-1.00s.
Blechman, Robert M., to Pro-Tech, Inc. Fluid-operated sampler and flowmeter. 3,720,109, Cl. 73-421.00b.
Bleicher, Manfred: *See—*
Wanner, Karl; Schmidt, Wolfgang; Bleicher, Manfred; Sigg, Horst; Lehmann, Werner; and Burklin, Max, 3,720,269.
Bockstie, Lawrence G., Jr., to Corning Glass Works. Coated porous ceramic article and method of making. 3,720,543, Cl. 117-218.000.
Boettger, Harold E.: *See—*
Tilford, Albert R.; Boettger, Harold E.; and Yew, Ming-Chih, 3,720,424.
Boggs, Roger L.: *See—*
Allen, Norman R.; Boggs, Roger L.; and Stedman, Robert N., 3,720,448.
Bolduc, Lee R., to Medical Plastics, Inc. Plate electrode. 3,720,209, Cl. 128-2.06e.
Bollinger, Luther L., Sr., to Hennessy Products, Incorporated. Plug door control mechanism. 3,720,020, Cl. 49-362.000.
Bollyky, Laszlo Joseph, to American Cyanamid Company. Generation of light from the decomposition of dioxetaneones in the presence of a fluorescer. 3,720,622, Cl. 252-188.300.
Bomar, Troy W., Jr. Motor vehicle identification and speed control system. 3,720,911, Cl. 340-52.00f.
Bonham, Grant & Brundage, Limited: *See—*
Stauffer, James D., 3,720,608.
Bood, Louris, to Mowid Anstalt. Well pumping apparatus for polluted water. 3,720,488, Cl. 412-360.000.
Boram, Frank; and Kail, Denis Harold, to Stillit, Gerald Barry. Teaching apparatus. 3,720,006, Cl. 35-9.00c.
Borcoman, Mircea: *See—*
Borcoman, Mircea; and Ciufu, Virgil (said Ciufu assor. to said), 3,720,493.
Borcoman, Mircea; and Ciufu, Virgil, said Ciufu assor. to said Borcoman, Mircea. Machine for the manufacture of reinforced concrete or prestressed concrete elements. 3,720,493, Cl. 425-111.000.
Borders, Donald Bruce: *See—*
Barbatschi, Ferdinand; Borders, Donald Bruce; and Shay, Anthony Joseph, 3,720,691.
Borer, Alan John, to Servomex Controls Limited. Integrating amplifier circuits. 3,720,846, Cl. 307-238.000.
Bosch, Robert, G.m.b.H.: *See—*
Wanner, Karl; Schmidt, Wolfgang; Bleicher, Manfred; Sigg, Horst; Lehmann, Werner; and Burklin, Max, 3,720,269.
Bosch, Robert, Photokino GmbH: *See—*
Reinsch, Herbert; and Korner, Peter, 3,720,461.
Bosniack, David S.; and Metro, Stephen J., to Esso Research and Engineering Company. Synthetic ester lubricating oil compositions. 3,720,612, Cl. 252-32.500.
Boucher, Raymond, to Kamborian, Jacob S. Upper stretching and clamping mechanism. 3,719,964, Cl. 12-10.500.
Bouix, Henri: *See—*
Jampy, Pierre; Bouix, Henri; and Armand, Rene, 3,720,133.
Bowie, Raymond Alexander, to Imperial Chemical Industries Limited. Process for the manufacture of quinoxaline 1,4-dioxides. 3,720,673, Cl. 260-250.00r.
Bozeman, Hoyt W., Jr., to Reilly, Sherman, Inc. Grounding device for bundle conductor stringing blocks. 3,720,399, Cl. 254-134.3pa.

Bradford, Richard H. Warning and courtesy display system for motor vehicle operators. 3,720,913, Cl. 340-31.00r.
Bradshaw, Oscar G.: *See—*
Wilmot, Richard D.; Bradshaw, Oscar G.; and Wiggins, David G., 3,720,942.
Branch, Arthur: *See—*
Kaatz, Herbert W.; Small, Charles B.; and Branch, Arthur, 3,720,388.
Brazell, James W.: *See—*
Grubb, Willard L.; Turner, Howard E.; and Brazell, James W., 3,720,048.
Breas, Cornelia: *See—*
Van Burleigh, Johannes Balfour, 3,720,033.
Breas, Margo Charlotte: *See—*
Van Burleigh, Johannes Balfour, 3,720,033.
Bregeault, Marc, to Thomson-CSF. Brushless D.C. motor. 3,720,865, Cl. 318-138.000.
Brehm, Hans: *See—*
Heling, Wilhelm; and Brehm, Hans, 3,720,578.
Breton, Alain; Tricot, Marc; and Rajon, Andre, to Societe Rhodiaceta and CTA, Compagnie Industrielle de Textiles Artificiels & Synthetiques. Process for producing acetylated regenerated cellulose articles. 3,720,661, Cl. 260-227.000.
Breuer, Herman; and Schulze, Ernst, to Squibb, E. R., & Sons, Inc. 2-Phenyl-3-acylbenzothiazolines and their oxides. 3,720,683, Cl. 260-304.000.
Breuer, Hermann, to Squibb, E. R., & Sons, Inc. Nitrofuryl-oxadiazole amides. 3,720,668, Cl. 260-240.00a.
Breuer, Hermann, to Squibb, E. R., & Sons. 7-(3,5,7-Triaza-1-azonia-1-adamantyl)-acetamido) cephalosporanic acid halides and sulfonates. 3,720,669, Cl. 260-243.00c.
Breuer, Hermann; Schulze, Ernst; and Treuner, Uwe D., to Squibb, E. R., & Sons, Inc. 4-Amino-1H-pyrazolo [3,4-d] pyrimidine derivatives. 3,720,674, Cl. 260-256.40f.
Breuer, Hermann; and Schulze, Ernst, to Squibb, E. R., & Sons, Inc. 3-Amino-5-benzyl-1,2,4-oxadiazoles. 3,720,685, Cl. 260-307.00g.
Briggs, Eugene C., to Koehring Company. Fuel burner. 3,720,496, Cl. 431-353.000.
Brinegar, Willard C., to Celanese Corporation. Reverse osmosis process employing polybenzimidazole membranes. 3,720,607, Cl. 210-23.000.
British Iron and Steel Research Association, The: *See—*
Davies, Idwal; and Harris, Alan G., 3,720,511.
Britt, A. D., to United States of America, Navy. Gelation inhibited silicone fluids. 3,720,611, Cl. 252-18.000.
Britton, Leon R., to Guardian Electric Manufacturing Company. Construction for a relay. 3,720,892, Cl. 335-135.000.
Broadview Chemical Corporation: *See—*
Manaka, Kazuo, 3,720,656.
Brock, Andrew J.; and Pryor, Michael J., to Olin Corporation. Aluminum alloy. 3,720,508, Cl. 75-147.000.
Brody, Thomas P., to Westinghouse Electric Corporation. Emitter structure binary material field. 3,720,856, Cl. 313-309.000.
Brown & Root, Inc.: *See—*
Lochridge, Joe C., 3,720,069.
Brown, Bruce J. Digital fundamental PRP analyzer for pulse train signals. 3,720,871, Cl. 324-78.00d.
Brown, John R. Tubular instrument. 3,720,203, Cl. 128-4.000.
Brown, Omar L., to Fraze, Ermal C., mesne. Easy opening container wall. 3,720,349, Cl. 220-54.000.
Brown, Thomas O.; and Cupit, James H., to Texaco Inc. Synergistic mixture of zinc dialkyldithiophosphate and zinc dialkylphenoxyethyldithiophosphate. 3,720,613, Cl. 252-32.70e.
Bruce, George D.; Davidge, Ronald V.; Fowler, Raymond L.; Hobgood, George W., Jr.; Locklar, Henry C., Jr.; and Cleave, George W., to International Business Machines Corporation. Electrophotographic apparatus with synchronized document illumination and scaning feature. 3,720,465, Cl. 355-8.000.
Brundell och Jonsson AB: *See—*
Puna, Erich, 3,720,245.
Bruun & Sorensen A/S: *See—*
Christensen, Poul Sondergaard, 3,720,027.
Bryan, George D., Jr.; and Constantino, Nicholas, to Reynolds Metals Company. Method and apparatus for covering open ended container bodies. 3,720,038, Cl. 53-39.000.
Bryant, Herman G., Jr.: *See—*
Norman, Vello; Bryant, Herman G., Jr.; and Williams, Thomas Blair, 3,720,214.
Bryant, John C.; Turner, James Keith; Riley, James R.; and Aurich, Christoph W., to Gaston County Dyeing Machine Company. Means for feeding flowable particulate material. 3,720,241, Cl. 141-25.000.
Buchanan, James E.: *See—*
Avellar, Karl B.; Buchanan, James E.; and Higgins, Edward R., 3,720,866.
Buchel, Karl Heinz; Regel, Erich; and Plempel, Mandred, to Farbenfabriken Bayer Aktiengesellschaft. 1-(p-Chloro-m-nitrophenyl-diphenyl-methyl)-imidazole as an antifungal agent. 3,720,770, Cl. 424-273.000.
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, to Roussel-UCLAF. Novel process for preparation of optically active keto steroids. 3,720,713, Cl. 260-559.00h.
Budd Company, The: *See—*
Russell-French, Harry M., 3,720,175.
Bull General Electric (Nederland) N.V.: *See—*
Pot, Jacob Peter, 3,720,809.
Bullock, C. Gordon, Jr. Method of making foam cushions and product formed thereby. 3,719,963, Cl. 5-351.000.
Bunchak, William G.; and Krizek, Reynold J., to Westinghouse Air Brake Company. Mine haulage vehicle. 3,720,278, Cl. 180-24.000.
Burbank, John Emerson, to Scovill Manufacturing Company. Apparatus for finishing metal zipper chain. 3,720,086, Cl. 72-194.000.
Burkley, Kathleen E. Body support for invalids. 3,719,962, Cl. 5-91.000.
Burklin, Max: *See—*
Wanner, Karl; Schmidt, Wolfgang; Bleicher, Manfred; Sigg, Horst; Lehmann, Werner; and Burklin, Max, 3,720,269.
Burleson, Aaron, to Burlington Industries, Inc. Knitted compressive stretch fabrics, and method and apparatus for the manufacture thereof. 3,720,078, Cl. 66-133.000.
Burley, Elliott L.: *See—*
Kudirka, Alvydas A.; Burley, Elliott L.; and Moen, Robert H., 3,720,046.
Burlington Industries, Inc.: *See—*
Burleson, Aaron, 3,720,078.
Burroughs Corporation: *See—*
Dedek, Frank G., 3,720,491.
Kupsky, George A., 3,720,452.
Bushon, Richard J. Wire hanger attachment. 3,720,357, Cl. 223-85.000.
Buttery, Ron G.; Seifert, Richard M.; Lundin, Robert E.; and Guadagni, Dante G., to United States of America, Agriculture. Preparation of 2-methoxy-3-isobutylpyrazine. 3,720,672, Cl. 260-250.00r.
Butz, Carl C.: *See—*
Forse, Harry D.; and Butz, Carl C., 3,720,330.
Byrd, Ottis G., to Cities Service Oil Company. Method of deep well cementing. 3,720,266, Cl. 166-312.000.
Byrnes, Peter Gordon: *See—*
Berta, Remo Joseph; and Byrnes, Peter Gordon, 3,720,072.
C&M Manufacturing Company, Inc.: *See—*
Minich, Paul R., Jr.; and Shaver, Donald E., 3,720,226.
Calame, Guy: *See—*
de Mestral, Henri; Decosterd, Albert; Calame, Guy; and de Mestral, George, 3,720,055.
Callahan, Render B. Fishing float light. 3,720,824, Cl. 240-6.40f.
Calor: *See—*
Marie, Maurice; and Trouilhet, Achille, 3,720,081.
Camp, Ludwig: *See—*
Oliver, Norman J.; Hardie, Virgil; and Camp, Ludwig, 3,720,431.
Campani, John: *See—*
Moll, Oswin C., 3,720,783.
Canas-Rodriguez, Antonio; and Leeming, Peter Rodway, to Pfizer Inc. 3-Substituted-1-phenyl-indolines and indolinones in composition for alleviating mentol depression. 3,720,771, Cl. 424-274.000.
Canon Kabushiki Kaisha: *See—*
Uchiyama, Takashi, 3,720,144.
Uchiyama, Takashi; and Sorimachi, Kanehiro, 3,720,152.
Canron Limited: *See—*
Zastawny, Jaroslaw, 3,720,428.
Caprioli, Daniel P. Scraping apparatus. 3,719,993, Cl. 30-172.000.
Carleton, James T.: *See—*
Carlson, Norman R.; Putman, Richard E. J.; and Carleton, James T., 3,720,404.
Carlson, Norman R.; Putman, Richard E. J.; and Carleton, James T., to Westinghouse Electric Corporation. System for controlling carbon removal in a basic oxygen. 3,720,404, Cl. 266-34.00r.
Carlson, Wilbur E. Retainer clip device. 3,719,970, Cl. 24-73.0pb.
Caroselli, Remus F.; Dillon, James J.; and Leary, David E., to Owens-Corning Fiberglas Corporation. Fabric effect for fibrous glass fabrics. 3,720,571, Cl. 161-73.000.
Carriere, Jean-Paul: *See—*
Arendt, John Harold; Sachetto, Jean Pierre; and Carriere, Jean-Paul, 3,720,660.
Carter, William, Company, The: *See—*
Kaupin, William B., 3,720,212.
Cartmell, James V.; and Churchill, Donald, to National Cash Register Company, The. Encapsulated liquid crystals. 3,720,623, Cl. 252-316.000.
Cary, Harry W., Jr.: *See—*
Abrams, Ralph; and Cary, Harry W., Jr., 3,719,974.
Case, J. I., Company: *See—*
Stout, Don R.; and Klein, Jorge, 3,720,338.
Casson, Edward A., Jr., to Durolith Corporation. Method of making corrosion resistant metallic plates particularly useful as lithographic plates and the like. 3,720,164, Cl. 101-463.000.
Catchpole, Clive E., to United States of America, Navy. Multi-aperture image dissector tube. 3,720,838, Cl. 250-207.00r.
Caterpillar Tractor Company: *See—*
Allen, Norman R.; Boggs, Roger L.; and Stedman, Robert N., 3,720,448.
Berg, Lawrence F., 3,720,418.
Bianchetta, Donald L.; Sears, Richard L. M.; McWilliams, Orcenith D.; and Scheidt, James E., 3,720,282.
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., 3,720,221.
Cavanna, Mario. Device for longitudinally welding tapes of plastics material-in packaging machines. 3,720,565, Cl. 156-497.000.
Celanese Corporation: *See—*
Brinegar, Willard C., 3,720,607.
Santangelo, Joseph Germano, 3,720,744.
Centre National d'Etudes Spatiales: *See—*

Manuali, Bertrand Claude Marcel Jean, 3,720,888.

Century Geophysical Corporation: *See—*
McLaughlin, Charles R.; and West, Jerry B., 3,720,910.

Ceppi, Francis G., to Polaroid Corporation. Light polarizing device and process for making the same. 3,720,555, Cl. 156-102.000.

Champion International Corporation: *See—*
Vassiliades, Anthony; Nauman, Edward F.; and Shroff, Shrenik, 3,720,579.

Chandler, Robert B., to Kilpatrick & Company. Air conditioning system with variable primary air volume terminal and method of operation therefor. 3,720,258, Cl. 165-2.000.

Chandrasekaran, Swayambu; and Mueller, Max B., to Allied Chemical Corporation. Fluorine-containing copolymer compositions and method for their preparation. 3,720,655, Cl. 260-87.50b.

Chang, Hsu, to International Business Machines Corporation. Sensing of cylindrical magnetic domains. 3,720,928, Cl. 340-174.0tf.

Chatterji, Arun K.; Custozzo, Marianne; Kiriazides, Demosthenes K.; Russell, John J., Jr.; and Serio, John P., to Xerox Corporation. Electrostatic developer containing modified silicon dioxide particles. 3,720,617, Cl. 252-62.100.

Chayamiti, Hiroshi: *See—*
Fujisaki, Yoshisato; Fukuma, Noboru; Chayamiti, Hiroshi; Okamoto, Toshio; Seizaburo, Shigeta; and Kitago, Takanobu, 3,720,576.

Chemische Werke Huls Aktiengesellschaft: *See—*
List, Ferdinand; and Alfs, Helmut, 3,720,692.

Chen, Di; and Zook, James David, to Honeywell Inc. Optical memory with reference channel to compensate for deterioration. 3,720,923, Cl. 340-173.01m.

Chen, Karl K.: *See—*
Pauly, Bruce H.; Nicol, John; and Chen, Karl K., 3,720,088.

Chevallereau, Jacques, to Ets Parttzky S.A. Method of making footwear soles. 3,719,965, Cl. 12-146.00b.

Chevron Research Company: *See—*
Bacskai, Robert, 3,720,637.
Hutchison, Stanley O., 3,720,264.
Lapporte, Seymour J.; and Toland, William G., 3,720,706.
Sharman, Samuel H., 3,720,629.

Childs, William V.: *See—*
Ashe, Benedict H., Jr.; and Childs, William V., 3,720,597.

Chilman, John Alfred: *See—*
Davies, Stuart Duncan; and Chilman, John Alfred, 3,720,060.

Chmielewski, Andrzej; Czerniak, Eligiusz; and Kibort, Tadeusz. Device for reading pendulum-cam scales beam position and for placing and removing weights. 3,720,275, Cl. 177-3.000.

Chow, Henry; Faris, William R.; Lynn, Howard F.; and Payne, Delmar V., to Bendix Corporation, The. Receiver device. 3,720,945, Cl. 343-114.500.

Chow, Henry; Faris, William R.; Lynn, Howard F.; and Payne, Delmar V., to Bendix Corporation, The. Logarithimic receiver device which compensates for received signal strength receiver device. 3,720,946, Cl. 343-119.000.

Christensen, Poul Sondergaard, to Bruun & Sorensen A/S. Floor structure. 3,720,027, Cl. 52-309.000.

Chudler, Morris, to Prudential Lighting Corporation. Latch mechanism. 3,720,432, Cl. 292-220.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Ishii, Shozo, 3,720,763.

Churchill, Donald: *See—*
Cartmell, James V.; and Churchill, Donald, 3,720,623.

Ciba Corporation: *See—*
Nelson, John Archiblad; and Zaunius, Giedre Maria, 3,720,702.

Ciba Geigy AG: *See—*
Martin, Henry; and Beriger, Ernst, 3,720,735.

Ciba-Geigy AG: *See—*
Grelat, Maurice, 3,720,678.

Ciba-Geigy Corporation: *See—*
Konopka, Edward Alexander; and Gelzer, Justus Melchior, 3,720,764.
Randell, Donild Richard; and Cox, Ernest Alfred, 3,720,616.
Schindler, Walter; and Zuest, Armin, 3,720,676.
Schindler, Walter; Schmid, Erich; and Zuest, Armin, 3,720,677.
Wehrli, Hansuli; and Jeger, Oskar, 3,720,667.

Cincinnati Milacron Inc.: *See—*
Kaesemeyer, Carl W., 3,720,124.
Seidel, William B., 3,719,987.

Cinelli, Ermanno: *See—*
Paret, Giancarlo; and Cinelli, Ermanno, 3,720,605.

Cirulis, Uldis, to NUSonics, Inc. Acoustic flowmeter. 3,720,105, Cl. 73-194.00a.

Cities Service Company: *See—*
Olechowski, Jerome Robert, 3,720,654.
Olechowski, Jerome Robert, 3,720,725.

Cities Service Oil Company: *See—*
Byrd, Ottis G., 3,720,266.
Murphy, Bob G.; and Scott, J. O., 3,720,263.

Citrex, S.A.: *See—*
Smeets, Alfred, 3,720,621.

Ciufu, Virgil: *See—*
Borcoman, Mircea; and Ciufu, Virgil, 3,720,493.

Clark & Vicario Corporation: *See—*
Kaiser, Robert George, 3,720,315.

Clark, Adrian Percy, to Plessey Telecommunications Research Limited. Electrical signalling systems using correlation detectors. 3,720,789, Cl. 179-15.0bc.

Clark, Burton P.: *See—*
Garland, Newton C.; Scanlon, James D.; Meier, Otto H.; Tassie, Douglas P.; Clark, Burton P.; and Backus, Lester F., 3,720,301.

Clark, David P., to Exact Weight Scale Company, Inc., The. Weighing and delivery apparatus with initial volumetric dose and dribble feed. 3,720,286, Cl. 177-81.000.

Clark Equipment Company: *See—*
Snyder, James H.; and Riedner, William E., 3,720,327.

Clark, Frank S., to Monsanto Company. Polyphenyl thioether lubricating compositions. 3,720,614, Cl. 252-46.700.

Clark-Reliance Corporation, The: *See—*
Goellner, Allan R., 3,720,223.

Cleanamation, Inc.: *See—*
Forse, Harry D.; and Butz, Carl C., 3,720,330.

Cleary, James M. Instrument for measuring maximum expiratory flow rate. 3,720,202, Cl. 128-2.080.

Cleave, George W.: *See—*
Bruce, George D.; Davidge, Ronald V.; Fowler, Raymond L.; Hobgood, George W., Jr.; Locklar, Henry C., Jr.; and Cleave, George W., 3,720,465.

Clemens, Anton Hubert; and Hurtle, Richard LaVerne, to Miles Laboratories, Inc. Measuring and indicating apparatus. 3,720,837, Cl. 250-206.000.

Clemmer, Michael G. Auxiliary tip for the rear end of a ski runner of a snowmobile. 3,720,421, Cl. 280-28.000.

Clyne, Robert W. Idler member and method of roughening a portion of the exterior surface thereof. 3,719,978, Cl. 29-121.00r.

Co-Data Corporation: *See—*
Eichen, Howard R.; and Paulsen, Robert H., 3,720,948.

Coates, Frank D., to Coates Manufacturing Co. Snowplow wing. 3,720,010, Cl. 37-42.00r.

Coates Manufacturing Co.: *See—*
Coates, Frank D., 3,720,010.

Cochran, David L.: *See—*
Mainhardt, Robert; Cochran, David L.; Deleray, Arthur L.; Fritzler, Gary L.; and Mawhinney, Robert C., 3,720,167.

Cochran, Michael J., to Tektronix, Inc., mesne. Calculator with hierarchy control system. 3,720,820, Cl. 235-156.000.

Cohen, Harvey K., 50% to Conn, Bernice G. Filter and water recirculation system. 3,720,318, Cl. 210-169.000.

Cohen, Melvin Irwin: *See—*
Maydan, Dan; Cohen, Melvin Irwin; and Kerwin, Robert Eugene, 3,720,784.

Cohen, Ronald, to United States of America, Air Force. Power system for underwater vehicle. 3,720,179, Cl. 114-16.00g.

Coherent Radiation: *See—*
Hobart, James L.; and Jarrett, Steven M., 3,720,213.

Cole, William T., Jr.: *See—*
Johnson, Theodore B.; Cole, William T., Jr.; and Stamm, Orval M., 3,720,169.

Collier-Keyworth Company: *See—*
Gilbert, Roy O., 3,720,396.

Collinson, Eric S.; deceased (by Collinson, Eva M.; executrix); and Howald, Werner E., to General Electric Company. Combustor and fuel injector. 3,720,058, Cl. 60-39.74r.

Collinson, Eva M.: *See—*
Collinson, Eric S.; and Howald, Werner E., 3,720,058.

Collinson, John D.: *See—*
Russell, Kenneth F.; Baildon, Shipley; and Collinson, John D., 3,720,285.

Colorado Springs National Bank: *See—*
Lundin, Charles E., 3,720,507.

Columbia Gas System Service Corporation: *See—*
Mercier, Gary M., 3,720,858.

Compagnie Francaise d'Entreprises Metalliques: *See—*
Vilain, Robert H., 3,720,066.

Conn, Bernice G.: *See—*
Cohen, Harvey K., 3,720,318.

Constantino, Nicholas: *See—*
Bryan, George D., Jr.; and Constantino, Nicholas, 3,720,038.

Continental Can Company: *See—*
Friendship, Kenneth F. M., 3,720,242.

Continental Can Company, Inc.: *See—*
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Contract Cleaning Co., Pty. Limited: *See—*
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Control Data Corporation: *See—*
Elsing, John W., 3,720,930.
Perkins, Robert L.; and Keel, Beat G., 3,720,932.

Controls Company of America: *See—*
Kahale, Abed G.; Yatsushiro, Kenji; and Wielgus, Thaddeus S., 3,720,936.

Cook Paint & Varnish Company: *See—*
Hart, Milburn L.; and Meinert, Kerwin E., 3,720,377.

Coonradt, Harry L.; and Snyder, Paul W., Jr., to Mobil Oil Corporation. Hydrocracking process. 3,720,601, Cl. 208-111.000.

Cooper, Charles R.: *See—*
Aldrich, Billy R.; Cooper, Charles R.; and Rasquin, John R., 3,720,208.

Cooper Laboratories (Cooper), mesne: *See—*
Greenfield, Walter; and Berg, Raymond, 3,720,341.

Corchran, Charles E., to Variety Products Inc. Double curvature plywood sheet for back rest. 3,720,441, Cl. 297-284.000.

Corliss, Robert F.: *See—*

Corliss, Robert F.; and Wilkinson, Frank (said Wilkinson assor to said), 3,720,232.
Corliss, Robert F.; and Wilkinson, Frank, said Wilkinson assor to said Corliss, Robert F. Fluid pressure responsive valve controller. 3,720,232, Cl. 137-624.014.
Cornell Aeronautical Laboratory, Inc.: *See*—
Adams, Donald E.; and Vassallo, Franklin A., 3,720,103.
Corning Glass Works: *See*—
Bockstie, Lawrence G., Jr., 3,720,543.
Duke, David A.; and Macdowell, John F., 3,720,526.
Farrauto, Robert J.; and Haynes, William L., 3,720,527.
Corson, G. & W. H., Inc.: *See*—
Smith, Charles L.; and Webster, William C., 3,720,609.
Cosden Oil & Chemical Company: *See*—
Daniels, Calvin L.; and Watson, James M., 3,720,727.
Cottwald, Leo: *See*—
Eiler, Peter, 3,720,280.
Coughlin, Robert W.; and Siegel, Richard D., to Research Corporation. Radiation crosslinked, swelled semipermeable membranes. 3,720,321, Cl. 210-500.000.
Coulter, Earl E.; Hemker, Fritz L.; and Kazmierski, Elias A., to Babcock & Wilcox Company, The. Pulverized fuel delivery system for a blast furnace. 3,720,351, Cl. 222-1.000.
Cowlard, Frederick Claud, to Beckwith Carbon Corporation. Manufacture of fibre-reinforced carbon bodies. 3,720,575, Cl. 161-170.000.
Cowpland, Michael C. J.: *See*—
Matthews, Terence H.; Gold, Charles N.; and Cowpland, Michael C. J., 3,720,887.
Cox, Ernest Alfred: *See*—
Randell, Donild Richard; and Cox, Ernest Alfred, 3,720,616.
Cox, Ernest P. Tractor-mounted wood waste breaking apparatus. 3,720,359, Cl. 225-97.000.
Cox, Terence; and Featherstone, William, to Imperial Chemical Industries Limited. Concentrating aqueous acetone. 3,720,717, Cl. 260-593.00p.
Coy, Donald C.: *See*—
Murray, Glen W.; and Coy, Donald C., 3,720,336.
Crabtree, Royale R.: *See*—
Beeker, Charles W.; and Crabtree, Royale R., 3,720,902.
Craig, Warren J. Machine for extracting meat from crab sections. 3,719,967, Cl. 17-71.000.
Crain, R. L., Limited: *See*—
Dorrow, Henry E., 3,720,561.
Cramer, Robert L.; and Henneman, John W., to Bendix Corporation, The. System for enriching inhalable air with oxygen. 3,720,501, Cl. 23-281.000.
Crawford, Donald C., to FMC Corporation. Timed supply roll braking. 3,720,383, Cl. 242-74.440.
Croix, Louise S., to Airco, Inc. Separating 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether from 1-chloro-2,2,2-trifluoroethyl difluorochloro-methyl ether by azeotropic distillation. 3,720,587, Cl. 203-58.000.
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Steven, Gary; and Pinnow, Kenneth E., 3,720,545.
CTA, Compagnie Industrielle de Textiles Artificiels & Synthetiques: *See*—
Breton, Alain; Tricot, Marc; and Rajon, Andre, 3,720,661.
Cummins, Millard M.; Hankins, Thomas E.; Best, Robert; and Biesecker, Frederick, to Soniclens, Inc. Ultrasonic cleaning device for fragile heat-sensitive articles. 3,720,402, Cl. 259-72.000.
Cunningham, Robert E.; Privott, Wilbur J., Jr.; and Rakestraw, Lawrence F., to Monsanto Company. Melt spinning process. 3,720,741, Cl. 264-82.000.
Cupit, James H.: *See*—
Brown, Thomas O.; and Cupit, James H., 3,720,613.
Curran, Bernard E., to Robertson, H. H., Company. Flooring section and composite floor utilizing the same. 3,720,029, Cl. 52-334.000.
Curran, John R., to Foxboro Company, The. Valve bonnet cooling system. 3,720,227, Cl. 137-339.000.
Custozzo, Marianne: *See*—
Chatterji, Arun K.; Custozzo, Marianne; Kiriazides, Demosthenes K.; Russell, John J., Jr.; and Serio, John P., 3,720,617.
Cutler, Cassius Chapin, to Bell Telephone Laboratories, Incorporated. Conditional replenishment video encoder with predictive updating. 3,720,786, Cl. 178-7.100.
Cutler, Hymie, to Bendix Corporation, The. Numerical control system adaptive to workpiece hardness. 3,720,120, Cl. 82-2.00b.
Cypher, David T. Compartmented trash receptacle. 3,720,346, Cl. 220-22.300.
Czerniak, Eligiusz: *See*—
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Czyryk, Chester S., to Mangood Corporation. Recording device. 3,720,954, Cl. 346-106.000.
D'Agostino, Candido: *See*—
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Daikin Kogyo Co., Ltd.: *See*—
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Damon Corporation: *See*—
Badessa, Rosario S., 3,720,813.
Danesi, Wilbert P.; and Thielemann, Rudolf H., to Martin Metals Company. Nickel base alloy. 3,720,509, Cl. 75-171.000.
Danfoss A/S: *See*—
Nielsen, Borge Niels Jorgen, 3,719,988.
Daniels, Calvin L.; and Watson, James M., to Cosden Oil & Chemical Company. Purification of acetylenically unsaturated hydrocarbons. 3,720,727, Cl. 260-674.00r.
Daniels, Charles J.; and La Branche, Harvey W., to Mattel, Inc. Disc drive. 3,720,415, Cl. 274-39.00a.
Dattner, Richard. Building construction. 3,720,022, Cl. 52-79.000.
David, Emil J., to Eaton Yale & Towne Canada Limited. Method and apparatus for handling trees. 3,720,246, Cl. 144-3.00d.
Davidge, Ronald V.: *See*—
Bruce, George D.; Davidge, Ronald V.; Fowler, Raymond L.; Hobgood, George W., Jr.; Locklar, Henry C., Jr.; and Cleave, George W., 3,720,465.
Davies, Guy Edward, to Plessey Handel Und Investments A. G. Fluid logic arrangements. 3,720,219, Cl. 137-804.000.
Davies, Idwal; and Harris, Alan G., to British Iron and Steel Research Association, The. Production of metal strip from powdered metal. 3,720,511, Cl. 75-214.000.
Davies, Stuart Duncan; and Chilman, John Alfred, to Dowty Rotol Limited. Fans. 3,720,060, Cl. 60-226.00r.
Davis, Billy E.; and Dunegan, Ronald G., to Signet Controls Incorporated. Double ball meter prover system. 3,720,089, Cl. 73-3.000.
Davis, Lester W., Jr., to Esso Research and Engineering Company. Quick change multi-fuel burner feed assembly. 3,720,378, Cl. 239-397.000.
Davy-Ashmore Aktiengesellschaft: *See*—
Konig, Josef; and Schiefer, Erich, 3,720,745.
Dawley, Fred M. Methods for constructing multi-story structures. 3,720,034, Cl. 52-742.000.
De Lamotte, Emmanuel: *See*—
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de Mestral, George: *See*—
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de Mestral, Henri; Decosterd, Albert; Calame, Guy; and de Mestral, George, to Sobico Inc. Synthetic material textile filaments. 3,720,055, Cl. 57-140.00j.
De Rooij, Abraham H.; and Aggenbach, Pierre A. M., to Stamicarbon N.V. Process for the continuous preparation of an aqueous solution of a hydroxylammonium salt. 3,720,758, Cl. 423-388.000.
De Sio, Frederick Carl, to AMP Incorporated. Self-actuating loadbreak connector. 3,720,904, Cl. 339-34.000.
de Vinck, Luc Gaston, to Villeroy & Boch Keramische Werke KG. Apparatus for joining wall tiles. 3,720,490, Cl. 425-3.000.
De Vogelaere, George E. Portable target to receive contain, and preven splashback of medium velocity projectiles. 3,720,411, Cl. 273-102.400.
De Vries, Marcus, to N.V. Leeuwarder Papierwarenfabriek. Title molded trays with means to prevent jamming. 3,720,344, Cl. 217-26.500.
Deatcher, John H.: *See*—
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Kimble, Victor W., 3,720,569.
Dehne, Clarence A., to Webb, Jervis B., Company. Conveyor carrier tow bar. 3,720,172, Cl. 104-172.500.
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Denningham, Robert L., to United States of America, Navy. Variable-bar resolution target. 3,720,472, Cl. 356-124.000.
DeRosa, Eugene R. Method and apparatus for splicing replacement pile section to pile stub. 3,720,068, Cl. 61-53.000.
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Pohl, Gerhard; Rink, Karl-Heinz; Triebel, Wolfgang; Weiberg, Otto; and Weigert, Wolfgang, 3,720,689.
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Wollner, Johannes; and Tietz, Wolfgang, 3,720,636.
DeVries, Jan Willem, to Organon Inc. Process for extracting pancreas glands. 3,720,65?, Cl. 260-112.700.
DeWitt, Bernard J.; and Martinsons, Aleksandrs, to PPG Industries, Inc. Method of coating an electrode. 3,720,590, Cl. 204-37.00r.

DHM Research & Development Corporation, mesne: *See*—
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Dicomed Corporated: *See*—
Hilden, Richard H., 3,720,859.
Diebold, Incorporated: *See*—
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Dinwiddie, Kendall L., to Varian Associates. Automated radiation thereapy machine. 3,720,817, Cl. 235-161.110.
Ditscheid, Hans L., to Eastman Kodak Company. Microfilm reader. 3,720,464, Cl. 353-27.000.
Dixon, Norman E., to United States of America, Atomic Energy Commission. Ultrasonic apparatus and method for nondestructively measuring the physical properties of a sample. 3,720,098, Cl. 73-67.700.
Dolby, Dale P., to Ampex Corporation. Dual magnetic tape cassette transport and carrousel apparatus. 3,720,794, Cl. 179-100.2pm.
Dolfini, Joseph Edward: *See*—
Welch, Arnold D.; and Dolfini, Joseph Edward, 3,720,665.
Dominik, Erich Dietmar, to Timken Company, The. Tapered roller retainer and method of bearing assembly. 3,720,450, Cl. 308-214.000.
Donaldson Company, Inc.: *See*—
Lapple, Charles E., 3,720,313.
Dorrow, Henry E., to Crain, R. L., Limited. Process for producing manifolded forms. 3,720,561, Cl. 156-272.000.
Dover Corporation: *See*—
Mc Math, Jack A., 3,720,220.
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Dow Chemical Company, The: *See*—
Armstrong, William A., 3,720,036.
Mani, Inder, 3,720,592.
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Downs, Raymond F., to DHM Research & Development Corporation, mesne. Method and apparatus for detecting and counting objects by translation of video signals. 3,720,812, Cl. 235-92.0pc.
Dowty Rotol Limited: *See*—
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Doyle, Carroll F.: *See*—
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dradzitzkyBlgiu: *See*—
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Johnston, Mack S., 3,720,355.
Draghicescu, Antoaneta M.; and Radoi, Aurel C., to Institutul de Cercetari Technologice Pentru Constructii de Masini. Apparatus for the hard-chrome plating of large metallic surfaces. 3,720,596, Cl. 204-211.000.
Drelich, Arthur H., to Johnson & Johnson. Method of bonding nonwoven fabrics. 3,720,562, Cl. 156-291.000.
Dresser Industries, Inc.: *See*—
Gorgens, Joseph E.; and Bissell, Robert D., 3,720,234.
McCallum, Hugh F., 3,720,274.
Drnges, Ernst; and Wagner, Fritz, to Sigri Elektrographit GmbH. Protection from laser radiation. 3,720,836, Cl. 250-108.0fs.
Drogo, Pierre Louis Marie. Pin for electrical connectors as well as connectors provided with this pin. 3,720,905, Cl. 339-97.00r.
Drummond Instrument Company: *See*—
Drummond, Michael E.; and Robinson, John E., 3,720,354.
Drummond, Michael E.; and Robinson, John E., to Drummond Instrument Company. Dispensing micropipette apparatus having disposable parts. 3,720,354, Cl. 222-386.000.
Drzewiecki, Tadeusz M., to United States of America, Army. High speed decoupled fluidic switching device. 3,720,218, Cl. 137-839.000.
Duck, James; and Lewis, James H. Method and apparatus for controlling an offshore well. 3,720,260, Cl. 166-.500.
Duke, David A.; and Macdowell, John F., to Corning Glass Works. Glass-ceramic body. 3,720,526, Cl. 106-39.0dv.
Duncan, Ralph E.: *See*—
Shook, Paul R.; Sweeney, Earl G.; and Duncan, Ralph E., 3,720,312.
Dunegan, Ronald G.: *See*—
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Durolith Corporation: *See*—
Casson, Edward A., Jr., 3,720,164.
Duyverman, Coenraad J.; and Gorgels, Martin J., to Stamicarbon N.V. Process for preparing a solution containing hydroxyl ammonium phosphate. 3,720,755, Cl. 423-307.000.
Dyksterhouse, Robert M. Directional signal apparatus. 3,720,917, Cl. 340-67.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Junger, Hans; Kotzsch, Hans-Joachim; Vahlensieck, Hans-Joachim; and Weissenfels, Franz, 3,720,642.
Earsley, Norman: *See*—
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Eaton Yale & Towne, Inc.: *See*—
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Krausser, Heinz; and Krausser, Alfred, 3,719,998.
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Eichen, Howard R.; and Paulsen, Robert H., to Co-Data Corporation. Processing of coordinate values of points entered in a graph board or the like. 3,720,948, Cl. 444-1.000.
Eichenhofer, Josef, to Automatic Bar Feed Ltd. Facing stop system. 3,720,123, Cl. 82-34.00a.
Eichinger, Le Roy J.: *See*—
Martin, Robert L.; Howland, Leland L.; and Eichinger, Le Roy J., 3,720,842.
Eichman, Ellis V. Curtain wall system with vents. 3,720,025, Cl. 52-204.000.
Eidinger, Adolf; Sanders, Mathias; and Schnieder, Jost, to Aktiengesellschaft Brown, Boveri & Cie. Gas blast circuit breaker. 3,720,799, Cl. 200-148.00r.
Eiler, Peter, to Cottwald, Leo. Multi-axled vehicle chassis. 3,720,280, Cl. 180-64.00r.
Einstein, Bernard Ceasar: *See*—
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Eisenberger, Peter M.; and McCall, Samuel Leverte, Jr., to Bell Telephone Laboratories, Incorporated. Nonlinear device for frequency shifting X-rays. 3,720,843, Cl. 307-88.300.
Ekstrom, Lars. Swingable wash basin for compact shower-room. 3,719,959, Cl. 4-168.000.
Eldridge, David G.: *See*—
Hayner, Paul F.; and Eldridge, David G., 3,720,483.
Elkins, Jack D. Inflatable warning device for roadways. 3,720,181, Cl. 116-63.00p.
Elliott, Kenneth F., to GTE International Incorporated. Rotary switch. 3,720,893, Cl. 335-138.000.
Elliott, Michael; and Janes, Norman F., to National Research Development Corporation. Insecticides. 3,720,703, Cl. 260-468.00h.
Elsing, John W., to Control Data Corporation. Thermal expansion compensator. 3,720,930, Cl. 340-174.10b.
EMI Limited: *See*—
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Energy Sciences, Inc.: *See*—
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Engelman, Valentine R.: *See*—
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Enters, Edward W.; and Price, Warren H., to Gilson Bros. Co. Load limiter for self-energizing drive. 3,720,112, Cl. 74-196.000.
Entringer, Michel, to Societe Wendel Sidelor S.A. Heat treatment of hot rolled steel wire rods. 3,720,544, Cl. 148-14.000.
Epitestudomanyl Intezet: *See*—
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Erhibitors Service Company: *See*—
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Erickson, Raymond Curry, to Squibb, E. R., & Sons, Inc. α-Ureidocyclohexadienylalkylene-penicillins. 3,720,664, Cl. 260-239.100.
Erin Industries, Inc.: *See*—
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Ersilio, Levati, to Mattel, S.p.A. Chassis for a miniature toy vehicle. 3,720,017, Cl. 46-221.000.
Esso Production Research Company: *See*—
Heilhecker, Joe K.; and Maurer, William C., 3,720,261.
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Esso Research and Engineering Company: *See*—
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Euclid, Inc.: *See—*
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Fagerstrom, Joseph W.; and Robbins, Frederick E., to Western Electric Company, Incorporated. Method of assembling and securing articles with a support. 3,719,989, Cl. 29-604.000.

Fairchild Hiller Corporation: *See—*
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Faltz, John W.: *See—*
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Fantoni, Giuseppe, to Olivetti, Ing., C., & C., S.p.A. Automatic tool changing device for a machine tool. 3,719,977, Cl. 29-26.00a.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
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Rinkler, Heinrich; Wieden, Horst; Engelhard, Helmut; and Nogaj, Alfred, 3,720,733.
Schwochow, Friedrich; and Heinze, Gerhard, 3,720,756.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
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Chow, Henry; Faris, William R.; Lynn, Howard F.; and Payne, Delmar V., 3,720,946.

Farrauto, Robert J.; and Haynes, William L., to Corning Glass Works. Fast setting hydraulic cements from glass powders. 3,720,527, Cl. 106-85.000.

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Fastway Fasteners, Inc.: *See—*
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Feather, Landis E.; and Morris, Louis, to Westinghouse Electric Corporation. Electrical inductive apparatus. 3,720,897, Cl. 336-60.000.

Featherstone, William: *See—*
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Federspill, George M., to Steel Parts Corporation. Method of making bushings. 3,719,985, Cl. 29-423.000.

Feinberg, Irving; and Heine, Henry, to Presto Lock Company. Combination padlock. 3,720,082, Cl. 70-25.000.

Feldman, Julian; and Tnomas, Martin, to National Distillers and Chemical Corporation. 2-Methylene glutarimide and process for preparing the same. 3,720,679, Cl. 260-281.000.

Feldstein, Nathan; and Weiner, Joel Ana, to RCA Corporation. Electroless copper plating solutions with accelerated plating rates. 3,720,525, Cl. 106-1.000.

Fellows, Alfred L.: *See—*
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Fenton, Donald M., to Union Oil Company of California. Preparation of ortho-substituted aryl phosphines and metal complexes. 3,720,697, Cl. 260-429.00r.

Fenton, Donald M., to Union Oil Company of California. Conversion of chloroformates to an aldehyde. 3,720,718, Cl. 260-601.00r.

Fergason, James L.: *See—*
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Ferris, Delacy F., to United States of America, Navy, mesne. Expulsion bladder. 3,720,389, Cl. 244-135.00b.

Filho, Sertorio Arruda. Ellipsograph. 3,719,996, Cl. 33-30.00c.

Filterbau, Schenk, Gesellschaft mit beschrankter Haftung: *See—*
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Filters International, Inc.: *See—*
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Firestone Tire & Rubber Company, The: *See—*
Batten, Thomas Allen; and Griebling, Stephen Thomas, 3,720,252.

Fischer, Hubert, to Schaltbau Gesellschift mit beschrankter Haftung. Switch actuation with lever action. 3,720,802, Cl. 200-172.00a.

Fisher, Earl Eugene, to Staley, A. E., Manufacturing Company. Enzyme hydrolysis. 3,720,583, Cl. 195-31.00r.

Fisher, Robert Alan: *See—*
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Fisons Pharmaceuticals Limited: *See—*
King, John; and Lord, George Harry, 3,720,690.

Fitzgerald, William M. B., to Matthey, Johnson, and Mallory, Ltd. Apparatus for the manufacture of composite electrical contacts. 3,720,805, Cl. 219-152.000.

Fitzmaurice, Charles M.: *See—*
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Fleming, Robert W.: *See—*
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Fletcher, Robert I. Apparatus for handling sewage. 3,720,320, Cl. 210-199.000.

FMC Corporation: *See—*
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Foote, Robert E., to Viking Aircraft Corporation, mesne. Rotary wing system. 3,720,387, Cl. 244-17.250.

Forse, Harry D.; and Butz, Carl C., to Cleanamation, Inc. Vehicle lifting and towing trailer. 3,720,330, Cl. 214-86.00a.

Forster, Hans-Joachim M., to Daimler-Benz Aktiengesellschaft. Pump unit consisting of pressure oil pump and oil reservoir, especially for servo-steering systems. 3,720,478, Cl. 415-219.000.

Foss, Rudolph G., to Unique Industries, Inc. Fiberglass pipe working tool. 3,720,121, Cl. 82-4.00c.

Fotland, Richard A., to Horizons Incorporated. Optical development apparatus. 3,720,806, Cl. 219-216.000.

Fowler, Raymond L.: *See—*
Bruce, George D.; Davidge, Ronald V.; Fowler, Raymond L.; Hobgood, George W., Jr.; Locklar, Henry C., Jr.; and Cleave, George W., 3,720,465.

Fox, Henry L.; and Hubelbank, Mark. Method and apparatus for sorting packages and the like. 3,720,940, Cl. 343-6.00r.

Foxboro Company, The: *See—*
Curran, John R., 3,720,227.

Foxhall, Ollie C., to Joco Incorporated. Tire pressure indicator and inflation device. 3,720,224, Cl. 137-227.000.

Fralick, George E.; and Fralick, Roy A. Screen framing construction. 3,720,256, Cl. 160-392.000.

Fralick, Roy A.: *See—*
Fralick, George E.; and Fralick, Roy A., 3,720,256.

Franaszek, Peter A.; Grossman, David D.; and Will, Peter M., to International Business Machines Corporation. Differential encoding with lookahead feature. 3,720,875, Cl. 325-38.00b.

Franc, Charles. Mounting apparatus for illuminated gift packages, greeting cards, or the like. 3,720,825, Cl. 240-10.650.

Frank, Eugene P. Tone indicating music box and its application to a music instrument. 3,720,128, Cl. 84-94.000.

Franklin, John Warrender, to Tetal (Power Hydraulics) Limited. Load handling vehicles. 3,720,337, Cl. 214-674.000.

Fraze, Ermal C., mesne: *See—*
Brown, Omar L., 3,720,349.

Frechette, Thomas E., to Litton Business Systems, Inc. Action and shift jam reset mechanism. 3,720,297, Cl. 197-17.000.

Freeport Minerals Company: *See—*
Wieworowski, Tadeusz Karol; and Miller, David James, 3,720,750.

Frehn, Fritz, to Deutsche Edelstahl werke Aktiengesellschaft. Sintered steel-bonded hard metal alloy and a method of preparing the same. 3,720,504, Cl. 29-182.700.

French, Michael Robert, to Metal Box Company, Limited, The. Can openers. 3,719,991, Cl. 30-15.500.

French, William E.: *See—*
Frohock, Millard M., Jr.; Riley, Michael A.; and French, William E., 3,720,131.

Freudenberg, Carl, Firma: *See—*
Heling, Wilhelm; and Brehm, Hans, 3,720,578.

Frey, Rudolf; Niedermaier, Arnold; and Maier, Peter, to Schnellpressenfabrik Frankenthal Albert & Cie Aktiengesellschaft. Doctor device for low pressure rotating presses. 3,720,163, Cl. 101-169.000.

Fridinger, Tomas L.; and Mutsch, Edward L., to Minnesota Mining and Manufacturing Company. Method of controlling insects or nematodes by using S,S-substituted 2,2-thio-sulfinyl-and sulfonyl-alkanyl and alkanone N-substituted carbamoyloximes and their carbaoyl derivatives. 3,720,772, Cl. 424-277.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Gelbe, Horst; and Schmid, Karl, 3,720,647.

Friedrich, Heinz: *See—*
Massonne, Joachim; Kreutz, Rolf; and Friedrich, Heinz, 3,720,748.

Friedrichs, Josef; Schropfer, Karl Heinrich; and Kloren, Ulrich, to Ringfeder Gm.b.H. Coupling. 3,720,429, Cl. 287-52.060.

Friendship, Kenneth F. M., to Continental Can Company. Container filling apparatus. 3,720,242, Cl. 141-6.000.
Frisch, Erling: *See—*
Andrews, Harry N.; Frisch, Erling; Singleton, Norman R.; and Stein, Phillip C., 3,720,222.
Frishof, Henry, to Alco Standard Corporation. Making an arctic thread protector. 3,719,984, Cl. 29-482.000.
Fritz, Kurt; Lippitsch, Josef M.; and Lurf, Gunther, to Waagner-Biro Aktiengesellschaft. Tubular heat exchanger supporting and spacer structure. 3,720,259, Cl. 165-162.000.
Fritzler, Gary L.: *See—*
Mainhardt, Robert; Cochran, David L.; Deleray, Arthur L.; Fritzler, Gary L.; and Mawhinney, Robert C., 3,720,167.
Fritzsche, Donald E., to General Electric Company. Frying apparatus with remote control thermostat. 3,720,155, Cl. 99-337.000.
Frohock, Millard M., Jr.; Riley, Michael A.; and French, William E., to Hughes Aircraft Company. Built-in test for tank fire control computer. 3,720,131, Cl. 89-41.0me.
Fronberger, Paul-Ernst: *See—*
Widdig, Arno; Kuhle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, 3,720,682.
Frownfelter, Jerald L. Remotely controlled vehicle. 3,720,281, Cl. 180-6.500.
Fuhr, Karl: *See—*
Metzner, Wolfgang; Fuhr, Karl; Rudolph, Hans; Schnell, Hermann; and Heine, Hans-Georg, 3,720,635.
Fuji Photo Film Co., Ltd.: *See—*
Tezuka, Sigeru; Tanaka, Shinichi; and Taguchi, Seiichi, 3,720,360.
Fujii, Hideo, to Nippondenso Co., Ltd. Ignition system for multicylinder internal combustion engines. 3,720,195, Cl. 123-149.00d.
Fujisaki, Yoshisato; Fukuma, Noboru; Chayamiti, Hiroshi; Okamoto, Toshio; Seizaburo, Shigeta; and Kitago, Takanobu, to Asahi Kasei Kogyo Kabushiki Kaisha. Crimped composite fibers and process for preparation thereof. 3,720,576, Cl. 161-173.000.
Fujitsu Limited: *See—*
Yada, Yutaka; Higeta, Tsukumo; and Mitsui, Shinichi, 3,720,791.
Fukuma, Noboru: *See—*
Fujisaki, Yoshisato; Fukuma, Noboru; Chayamiti, Hiroshi; Okamoto, Toshio; Seizaburo, Shigeta; and Kitago, Takanobu, 3,720,576.
Fukushima, Osamu; Nagoshi, Kazuo; and Iwamoto, Toshiaki, to Kuraray Co., Ltd. Sheet materials of excellent durability and method of manufacturing the same. 3,720,631, Cl. 260-2.5ay.
Funk, Wilmer E.; and Sage, Ira H., to Production Technology Inc., mesne. Internal flash removal method. 3,719,983, Cl. 29-470.300.
Galdo, Gustavo M.; and Adler, Irwin L., to General Foods Corporation. Process for the manufacture of a concentrated coffee product. 3,720,518, Cl. 99-71.000.
Gale, Donald J., to Deering Milliken Research Corporation. Textile materials and processes for making the same. 3,720,500, Cl. 8-115.700.
Gale, Frederick Henry, to EMI Limited. Electron discharge devices. 3,720,889, Cl. 333-83.000.
Gallagher, James J., to Standard Pressed Steel Co. Method for applying a thermoplastic locking patch on a threaded fastener. 3,720,533, Cl. 117-21.000.
Gallaher Limited: *See—*
Arendt, John Harold; Sachetto, Jean Pierre; and Carriere, Jean-Paul, 3,720,660.
Gamble, Edward R., to American Air Filter Company, Inc. Palletized cargo trailer. 3,720,329, Cl. 214-84.000.
Gamon-Camet Industries, Inc.: *See—*
Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, 3,720,229.
Garay, Lajos; Urban, Gabor; Romhanyi, Andras; and Sisa, Laszlo, to Hutogepayar-Jasgbereny and Epitestudomanyl Intezet. Sandwich-panel building construction. 3,720,028, Cl. 52-284.000.
Gardner, Newell John. Method of preparing intravenous feeding containers. 3,720,240, Cl. 141-9.000.
Gardner, Phillip J.; Silver, H. Graham; Ahmed, Samir A.; and Heller, Adam, to GTE Laboratories Incorporated. Electric discharge lamp. 3,720,855, Cl. 313-229.000.
Garland, Newton C.; Scanlon, James D.; Meier, Otto H.; Tassie, Douglas P.; Clark, Burton P.; and Backus, Lester F., to General Electric Company. Ammunition handling system. 3,720,301, Cl. 198-32.000.
Garrett Corporation, The: *See—*
Potts, Harold L., 3,720,400.
Gasc, Jean-Claude: *See—*
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,720,713.
Gasteiger, Otto Ferdinand. Partition. 3,720,026, Cl. 52-241.000.
Gaston County Dyeing Machine Company: *See—*
Bryant, John C.; Turner, James Keith; Riley, James R.; and Aurich, Christoph W., 3,720,241.
Gebr. Giulini GmbH: *See—*
Vogel, Hans, 3,720,505.
Geiersbach, Allois F.: *See—*
Ringland, William L.; Neumann, Manfred E.; Kaeser, Ernst K.; and Geiersbach, Allois F., 3,720,863.
Gelbe, Horst; and Schmid, Karl, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Producing p-xylene. 3,720,647, Cl. 260-674.00a.
Gelzer, Justus Melchior: *See—*
Konopka, Edward Alexander; and Gelzer, Justus Melchior, 3,720,764.
General Binding Corporation: *See—*
Morrissey, Neal J., 3,720,808.
Staats, Henry N., 3,720,385.
Staats, Henry N.; and Morrissey, Neal J., 3,720,564.
General Electric Company: *See—*
Allen, Robert E., 3,720,551.
Ares, Manuel, 3,720,941.
Becker, Hans-Dieter; and Gilbert, Alfred R., 3,720,721.
Collinson, Eric S.; and Howald, Werner E., 3,720,058.
Fritzsche, Donald E., 3,720,155.
Garland, Newton C.; Scanlon, James D.; Meier, Otto H.; Tassie, Douglas P.; Clark, Burton P.; and Backus, Lester F., 3,720,301.
Hagie, Laird T.; and Ryer, Chester M., 3,720,739.
Hirst, Robert G.; and Desnoyers, George J., 3,720,549.
Kudirka, Alvydas A.; Burley, Elliott L.; and Moen, Robert H., 3,720,046.
Mc Carty, William J., 3,720,073.
Rathbun, William H., 3,720,867.
General Foods Corporation: *See—*
Galdo, Gustavo M.; and Adler, Irwin L., 3,720,518.
General Motors Corporation: *See—*
Abu-Isa, Ismat Ali; and Trexler, Harold E., 3,720,643.
Harned, John L.; and Johnston, Laird E., 3,720,447.
Jacobs, James W., 3,720,372.
Podolan, Edward G., 3,720,440.
Richards, Gary E., 3,720,371.
Tilford, Albert R.; Boettger, Harold E.; and Yew, Ming-Chih, 3,720,424.
Geri, Don Winston: *See—*
Hurtig, Roy Eugene; Geri, Don Winston; and Becker, Paul Horst, 3,720,150.
Gewerkschaft Eisenhutte Westfalia: *See—*
Wegmann, Horst; Smula, Karl Ulrich; Bartz, Lothar; and Stoltefuss, Wilhelm, 3,720,299.
Giaque, Harrie A. Device for opening wrappers of foodstuffs. 3,720,303, Cl. 206-46.00f.
Gilbert, Alfred R.: *See—*
Becker, Hans-Dieter; and Gilbert, Alfred R., 3,720,721.
Gilbert, Harold James; and Earsley, Norman, to Wickman Machine Tool Sales Limited. Mechanism for feeding bar stock to a multi-spindle lathe. 3,720,119, Cl. 82-2.70r.
Gilbert, Roy O., to Collier-Keyworth Company. Tilt mechanism for chairs or the like. 3,720,396, Cl. 248-378.000.
Gill, George Herbert, to United States of America, Navy. Carbon dioxide indicating meter. 3,720,093, Cl. 73-27.00r.
Gilmore, John F.; and Epting, Roy W., to Westinghouse Electric Corporation. Tubular electric discharge lamp with integral protective-insulating sleeve. 3,720,826, Cl. 240-11.40h.
Gilson Bros. Co.: *See—*
Enters, Edward W.; and Price, Warren H., 3,720,112.
Giovanni, Sfsto San: *See—*
Nistri, Ugo; Vargiu, Silvio; Giovanni, Sfsto San; and Pitzalis, Mario, 3,720,645.
Gladbach, Bergisch: *See—*
Widdig, Arno; Kuhle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, 3,720,682.
Glass Laboratories Company: *See—*
Shanok, Victor; and Shanok, Jesse P., 3,720,567.
Glassberg, Florence. Underarm construction for garments. 3,719,956, Cl. 2-125.000.
Gleim, William K. T., to Universal Oil Products Company. Metal recovery process. 3,720,603, Cl. 208-251.00r.
Godfrey, Wesley Lynn. Heavy small arms projectile. 3,720,170, Cl. 102-92.300.
Godin, Edmund J., to Kedsell Company. Unitary resilient guide member. 3,720,449, Cl. 308-3.00r.
Goellner, Allan R., to Clark-Reliance Corporation, The. Seal construction for steam traps. 3,720,223, Cl. 137-183.000.
Gold, Charles N.: *See—*
Matthews, Terence H.; Gold, Charles N.; and Cowpland, Michael C. J., 3,720,887.
Goldberg, Newton N.; and Fergason, James L., to Westinghouse Electric Corporation. Cholesteryl p-phenylazophenyl carbonate. 3,720,658, Cl. 260-207.100.
Goldberg, Raymond; and Shaw, Irving F., to West Laboratories, Inc. Safety device when opening ampoules. 3,720,250, Cl. 150-52.00r.
Golden Cycle Corporation, The: *See—*
Wilson, Harold W., 3,720,754.
Goodnight, Hershel: *See—*
Zink, John Smith; Goodnight, Hershel; and Reed, Robert D., 3,720,495.
Goodrich, B. F., Company, The: *See—*
McGinnis, Herbert E., 3,719,969.
Goodrich, Robert S., to Kalfsbeck, James and Kalfsbeck, Peter. Removable safety device for disabling firearms. 3,720,014, Cl. 42-1.00n.

Gorcik, Stanley W.; Kamysz, Richard A.; Hilton, Charles T., Jr.; and Faltz, John W., to Motorola, Inc. Dipole antenna arrangement for radio with seperate speaker-microphone assembly. 3,720,874, Cl. 325-16.000.

Gorgels, Martin J.: *See*—
Duyverman, Coenraad J.; and Gorgels, Martin J., 3,720,755.

Gorgens, Joseph E.; and Bissell, Robert D., to Dresser Industries, Inc. Double seated regulating valve. 3,720,234, Cl. 137-625.360.

Gottschlich, Rudolf W., to LaSalle Steel Company. Metallurgical process of bending steel to desired curvature or straightness while avoiding losses in strength. 3,720,087, Cl. 72-364.000.

Gouch and Company (Hanley) Limited: *See*—
Gough, George Terah, 3,720,494.

Gough, George Terah, to Gouch and Company (Hanley) Limited. Apparatus for casting ceramic articles. 3,720,494, Cl. 425-147.000.

Gould, Leslie R., to Esso Research and Engineering Company. Continuous dewaxing of oils by in situ refrigeration. 3,720,599, Cl. 208-33.000.

Grable, Donovan B. Method and apparatus for sub-surface deformation of well pipe. 3,720,262, Cl. 166-298.000.

Grace, W. R., & Co.: *See*—
Simpson, Edgar A.; and Doyle, Carroll F., 3,720,532.

Gracie, John: *See*—
Russell, Taft Birch; and Gracie, John, 3,720,872.

Graffman, Johan H.: *See*—
Winquist, Knut Ludvig; and Backman, Sture Anders, 3,720,403.

Grantham, Paulette. Continuous laundering. 3,720,080, Cl. 68-19.100.

Gray, Vernon H., to United States of America, National Aeronautics and Space Administration. Ablative system. 3,720,075, Cl. 62-467.000.

Grazioli, Alberto: *See*—
Sianesi, Dario; Fontanelli, Renzo; and Grazioli, Alberto, 3,720,646.

Greene, Charles W.; and Varner, George C., to Deering Milliken Research Corporation. Endless reinforcement and method for producing same. 3,720,570, Cl. 161-58.000.

Greenfield, Walter; and Berg, Raymond, to Cooper Laboratories (Cooper), mesne. Resealable hermetically sealed ampules and closure thereof. 3,720,341, Cl. 215-6.000.

Greenwood, Albert C., to Westinghouse Electric Corporation. Current monitoring means. 3,720,894, Cl. 335-204.000.

Gregg, Hendrick J. Wind turbine generator with exhaust gas heater. 3,720,840, Cl. 290-55.000.

Greiner Electronic AG: *See*—
Stettler, Christian, 3,720,353.

Grelat, Maurice, to Ciba-Geigy AG. Process for the manufacture of flavanthrones. 3,720,678, Cl. 260-273.000.

Grewe, Ferdinand: *See*—
Widdig, Arno; Kuhle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, 3,720,682.

Griebling, Stephen Thomas: *See*—
Batten, Thomas Allen; and Griebling, Stephen Thomas, 3,720,252.

Griffith, James R., to United States of America, Navy. Fluorinated polyols. 3,720,639, Cl. 260-33.4ep.

Grimmer, Paul D.: *See*—
McKechnie, John C.; and Grimmer, Paul D., 3,720,007.

Grise, Frederick G. J., to Pioneer Coveralls, Inc. Uniform tension load binder. 3,720,398, Cl. 254-51.000.

Gropper, Lee; and Stahl, Lawrence E., to Beckman Instruments, Inc. Centrifuge test tube stopper. 3,720,502, Cl. 23-292.000.

Grossman, David D.: *See*—
Franaszek, Peter A.; Grossman, David D.; and Will, Peter M., 3,720,875.

Grove, Robert K.; and Sloma, Richard O., to Lockheed Aircraft Corporation. Strength compounding capillary array. 3,720,044, Cl. 53-159.000.

Grubb, Willard L.; Turner, Howard E.; and Brazell, James W., to Heath International, Inc. Tractor drawn mower. 3,720,048, Cl. 56-15.900.

Grubis, Bernard: *See*—
Larribau, Etienne; Grubis, Bernard; and Sahores, Jean, 3,720,830.

Grunbaumq Heinrich, to Schachenmann, C., Dr., & Co. Apparatus for the measurement of tensile stresses on bands, filaments or the like. 3,720,100, Cl. 73-144.000.

GTE International Incorporated: *See*—
Elliott, Kenneth F., 3,720,893.

GTE Laboratories Incorporated: *See*—
Gardner, Phillip J.; Silver, H. Graham; Ahmed, Samir A.; and Heller, Adam, 3,720,855.

GTE Sylvania Incorporated: *See*—
Hedler, Robert A., 3,720,306.
Say, Donald L., 3,720,854.

Guadagni, Dante G.: *See*—
Buttery, Ron G.; Seifert, Richard M.; Lundin, Robert E.; and Guadagni, Dante G., 3,720,672.

Guardian Electric Manufacturing Company: *See*—
Britton, Leon R., 3,720,892.

Guinosso, Charles J.: *See*—
Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., 3,720,666.

Guiseley, Kenneth B.; and Whitehouse, Philip A., to Marine Colloids Inc. Sulfated gums and method of producing same. 3,720,659, Cl. 260-209.500.

Guldenpfennig, Rolf, to Reichhold-Albert-Chemie Aktiengesellschaft. Water dilutable coating compositions containing precondensates of phenol resols and etherified phenol resols. 3,720,648, Cl. 260-19.0ep.

Gulf & Western Industrial Products Company: *See*—
Michelson, Anatol, 3,720,127.

Gundlach, Robert W., to Xerox Corporation. Migration imaging method involving solvent wash-away of unmigrated particles. 3,720,513, Cl. 96-1.00r.

Gunkel, Otto, 1/2 to Filterbau, Schenk, Gesellschaft mit beschrankter Haftung. Fruit press. 3,720,159, Cl. 100-118.000.

Gunn, Kenneth C.; McDonagh, Stephen M.; and Rosenholm, Robert. Gas fusing sensing device. 3,720,797, Cl. 200-61.080.

Gustafson, T. Kenneth: *See*—
Kelley, Paul L.; Fisher, Robert Alan; and Gustafson, T. Kenneth, 3,720,884.

Gutzmer, Alfred N.: *See*—
Morgan, Martin J.; Evans, William C.; Rappaport, Richard A.; and Gutzmer, Alfred N., 3,720,873.

Guyton, Glen B. Lever for brake and clutch operation on cycle handlebars. 3,720,111, Cl. 74-489.000.

Haas, Arthur W., to McGraw-Edison Company. Hood style dishwasher. 3,720,215, Cl. 134-165.000.

Haas, Werner E.: *See*—
Adams, James E.; and Haas, Werner E., 3,720,456.

Hablitzel, Hermann: *See*—
Schwenk, Kurt; and Hablitzel, Hermann, 3,720,746.

Haehnel, Rudolf H.; and Wily, John L., to North American Rockwell Corporation. Method and apparatus for wire winding. 3,720,054, Cl. 57-9.000.

Haggenmiller, Joerome S.: *See*—
Bavisotto, Vincent S.; and Haggenmiller, Joerome S., 3,720,517.

Hagie, Laird T.; and Ryer, Chester M., to General Electric Company. Nuclear fuel pressing process. 3,720,739, Cl. 264-.500.

Hain, Edward: *See*—
Better, Bernard R.; Kosinski, Joseph W.; and Hain, Edward, 3,720,116.

Hall, Raymond L. Tie rods system for swimming pools with hopper bottoms. 3,720,064, Cl. 61-35.000.

Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company, N.V. Electric motors. 3,720,914, Cl. 310-43.000.

Halliburton Company: *See*—
Kurle, Arthur R., 3,720,390.

Halpern, Otto. 2-Amino-2-(6-methoxy-2-naphthyl)-propionic acid and derivatives thereof. 3,720,708, Cl. 260-519.000.

Halpert, Robert T.; and Fiore, Peter O., to Texas Instruments, Incorporated. Switch with improved means and method for calibration. 3,720,090, Cl. 73-4.00r.

Halsey, Carl C.: *See*—
Sewell, Robert G. S.; and Halsey, Carl C., 3,720,166.

Hamilton, Fenton D.: *See*—
Rochester, James R.; Hamilton, Fenton D.; Navarro, Felipe; and McCurdy, Neal R., 3,720,822.

Hamilton, Robert M.; and Ziccarelli, Salvatore F., to Beatrice Foods Co. Flavor potentiator comprising dried, yeast fermented whey and method of use. 3,720,519, Cl. 99-140.00n.

Hamm, Theodore, Brewing Co.: *See*—
Bavisotto, Vincent S.; and Haggenmiller, Joerome S., 3,720,517.

Hamond, Arthur H., Jr.: *See*—
Watson, George A.; and Hamond, Arthur H., Jr., 3,720,790.

Hankins, Thomas E.: *See*—
Cummins, Millard M.; Hankins, Thomas E.; Best, Robert; and Biesecker, Frederick, 3,720,402.

Hanlon, John P., Jr.; and Yoshioka, Sigenori. Energy absorber for arresting movement of loads. 3,720,393, Cl. 248-361.00a.

Hardie, Virgil: *See*—
Oliver, Norman J.; Hardie, Virgil; and Camp, Ludwig, 3,720,431.

Harman, James D. Light weight panel construction. 3,720,032, Cl. 52-618.000.

Harms, John F. Upflow cartridge filter apparatus. 3,720,322, Cl. 210-238.000.

Harnden, Michael Raymond, to Abbott Laboratories. 2-Amino-5-spiro substituted oxazolin-4-one compounds. 3,720,681, Cl. 260-293.660.

Harned, John L.; and Johnston, Laird E., to General Motors Corporation. Hydraulic anti-lock control system. 3,720,447, Cl. 303-21.00b.

Harnsberger, Bobby G., to Texaco Inc. San consolidation method and composition. 3,720,640, Cl. 260-33.60r.

Harper, William, Jr.: *See*—
Tang, Henry; and Harper, William, Jr., 3,720,882.

Harrah, Robert S. Pneumatic annunciator system. 3,720,182, Cl. 116-65.000.

Harrington, Winston F. Drafting tool. 3,719,999, Cl. 33-27.00b.

Harris, Alan G.: *See*—
Davies, Idwal; and Harris, Alan G., 3,720,511.

Harrison, Edmund, Jr., to Moline Machine Company Inc. Method and apparatus for detecting loose ends and missing filters in cigarettes. 3,720,311, Cl. 209-79.000.

Harrison, Ernest W.: *See*—
Newton, Cecil J. V.; and Harrison, Ernest W., 3,720,819.

Hart, Milburn L.; and Meinert, Kerwin E., to Cook Paint & Varnish Company. Spray gun. 3,720,377, Cl. 239-336.000.

Hart, William, to Mattel, Inc. Compact voice unit. 3,720,117, Cl. 74-798.000.

Hartig, Rufus G. Closed pond system for wet process phosphate plants. 3,720,757, Cl. 423-341.000.

Harvey, Donald M., to Eastman Kodak Company. Apparatus having an automatic range finder mechanism. 3,720,148, Cl. 95-44.00c.

Harwit, Martin, to Spectral Imaging Inc. Spectrometric imager. 3,720,469, Cl. 356-74.000.

Hashimoto, Hideaki, to Kabushiki Kaisha Prince Hotel. Simultaneous language translation system. 3,720,788, Cl. 179-1.00b.

Hashimoto, Tatsuji: *See*—
Isobe, Takehiro; Shimazu, Toshio; Ogawa, Koji; Arake, Yukio; Wakamatsu, Aizu; and Hashimoto, Tatsuji, 3,720,510.

Hashimoto, Toshio; and Tanabe, Isao, to Hitachi, Ltd. Mask for selectively exposing photo-resist to light. 3,720,143, Cl. 95-1.000.

Hass, David P., to Eaton Corporation. Vehicle crash sensor condition tester. 3,720,915, Cl. 340-52.00h.

Hass, Duane K.: *See*—
Kirby, Peter; and Hass, Duane K., 3,720,687.

Haszeldine, Robert Neville; and Tipping, Anthony Edgar, to United Kingdom of Great Britain and Northern Ireland, Minister of Aviation Supply in Her Britannic Majesty's Government of the. Polysiloxanes containing fluoroalkylaminoalkyl groups. 3,720,644, Cl.260-46.50e.

Hatasa, Shigeyoshi; and Iioka, Isao, to Lion Hamigaki Kabushiki Kaisha. Spilanthol-containing compositions for oral use. 3,720,762, Cl. 424-58.000.

Haugwitz, Rudiger D.: *See*—
Narayanan, Venkatachala; and Haugwitz, Rudiger D., 3,720,686.

Hauni-Werke Korber & Co., KG: *See*—
Lehmann, Frank-Dieter, 3,720,310.
Lorenzen, Heinz-Christen, 3,720,815.

Haveg Industries, Inc.: *See*—
Anderson, Robert W.; and Perreault, Aime Joseph, 3,720,747.

Hay, William D., to Unit Process Assemblies, Inc. Radiation backscatter measuring instrument. 3,720,833, Cl. 250-83.30d.

Hayakawa, Yukio: *See*—
Muta, Akinori; Hayakawa, Yukio; and Manaka, Makoto, 3,720,740.

Hayashi, Hideaki: *See*—
Tanaka, Tokuji; and Hayashi, Hideaki, 3,720,521.

Hayashi, Masamichi: *See*—
Ishii, Yoshikazu; Hayashi, Masamichi; and Tanaka, Shunichi, 3,720,787.

Hayashi, Motoshige: *See*—
Soda, Shigenari; Seki, Tatsujiro; Saiguji, Shigeru; and Hayashi, Motoshige, 3,720,572.

Haybuster Manufacturing Inc.: *See*—
Anderson, Joseph A.; and Neukom, Chester G., 3,720,052.

Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., to Universal Oil Products Company. Hydrocarbon isomerization catalyst and process. 3,720,628, Cl. 252-442.000.

Hayner, Paul F.; and Eldridge, David G., to Sanders Associates, Inc. Hydraulic power supply system. 3,720,483, Cl. 417-304.000.

Haynes, William L.: *See*—
Farrauto, Robert J.; and Haynes, William L., 3,720,527.

Hayward, H. Dutton; Trustee of the Hilda Trusts Nos. 1-9: *See*—
Schulein, Joseph; and Kortman, Joe M., 3,720,933.

Heard, Robert E., to Evans Products Company. Locking mechanism for bulkheads. 3,720,174, Cl. 105-376.000.

Heath International, Inc.: *See*—
Grubb, Willard L.; Turner, Howard E.; and Brazell, James W., 3,720,048.

Heatshield Research and Development Pty. Ltd.: *See*—
Menzies, John Ian; and Menzies, Maureen, 3,720,558.

Hedler, Robert A., to GTE Sylvania Incorporated. Means and process for achieving a controlled particle size range of cathode ray tube phosphors. 3,720,306, Cl. 209-1.000.

Hehl, Karl. Clamping unit for the casting mold of an injection molding machine. 3,720,061, Cl. 60-52.0hf.

Hehl, Karl. Machine for processing synthetic materials. 3,720,492, Cl. 425-107.000.

Heightley, John Donnell, to Bell Telephone Laboratories, Incorporated. Threshold logic circuits. 3,720,821, Cl. 235-172.000.

Heilhecker, Joe K.; and Maurer, William C., to Esso Production Research Company. Apparatus for rotatably suspending a pipe string in a well. 3,720,261, Cl. 166-208.000.

Heimann, Egon. Machine for manufacturing adhesive binder covers. 3,720,566, Cl. 156-544.000.

Heine, Hans-Georg: *See*—
Metzner, Wolfgang; Fuhr, Karl; Rudolph, Hans; Schnell, Hermann; and Heine, Hans-Georg, 3,720,635.

Heine, Henry: *See*—
Feinberg, Irving; and Heine, Henry, 3,720,082.

Heinemann Electric Company: *See*—
Nicol, Ronald, 3,720,891.

Heinze, Gerhard: *See*—
Schwochow, Friedrich; and Heinze, Gerhard, 3,720,756.

Heling, Wilhelm; and Brehm, Hans, to Freudenberg, Carl, Firma. Non-woven textile fleece containing perforated areas. 3,720,578, Cl. 162-116.000.

Heller, Adam: *See*—
Gardner, Phillip J.; Silver, H. Graham; Ahmed, Samir A.; and Heller, Adam, 3,720,855.

Helmerich & Payne, Inc.: *See*—
van Scoy, Davis A., 3,720,138.

Hemker, Fritz L.: *See*—
Coulter, Earl E.; Hemker, Fritz L.; and Kazmierski, Elias A., 3,720,351.

Hemphill, John M., to Armstrong Cork Company. Light transmitting foam plastic lenses. 3,720,827, Cl. 240-46.500.

Henderson, Lionel A., to Standard Oil Company. Ammonium nitrate propellant compositions. 3,720,553, Cl. 149-19.000.

Henn, Ruthild: *See*—
Schultze, Hans Joachim; and Henn, Ruthild, 3,720,650.

Henneman, John W.: *See*—
Cramer, Robert L.; and Henneman, John W., 3,720,501.

Hennessy Products, Incorporated: *See*—
Bollinger, Luther L., Sr., 3,720,020.

Hensel, Otis O. Apparatus for draining whey from cheese. 3,719,994, Cl. 31-46.000.

Hentschel, Harry; and Bjarsch, Otto, to Siemens-Electrogerate GmbH. Electric egg cooker. 3,720,156, Cl. 99-332.000.

Herbrich, Peter: *See*—
Wolff, Siegfried; Baumgart, Siegfried; Arnold, Ulf-Erick; Pohnisch, Hannelore; and Herbrich, Peter, 3,720,099.

Herubel, Jean Frederic, to Schlumberger, N., & Cie. Flexible unit assembly for processing textile fibres. 3,719,968, Cl. 19-236.000.

Hess, William Emil, Jr.; and Vella-Coleiro, George Philip, to Bell Telephone Laboratories, Incorporated. Tuned oscillator circuit for providing a rotating magnetic field. 3,720,883, Cl. 331-55.000.

Hibino, Sohei: *See*—
Shimizu, Tetsuji; Hibino, Sohei; Sumida, Hajime; Ueno, Shinichi; and Muraoka, Tateki, 3,720,857.

Hieronymus, Hans: *See*—
Albrecht, Adolf; Von Borcke, Ulruch; Hini, Paul; and Hieronymus, Hans, 3,720,901.

Higeta, Tsukumo: *See*—
Yada, Yutaka; Higeta, Tsukumo; and Mitsui, Shinichi, 3,720,791.

Higgins, Edward R.: *See*—
Avellar, Karl B.; Buchanan, James E.; and Higgins, Edward R., 3,720,866.

Hikida, Ryotaro; and Ogasawara, Takeo, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Disc brake anti squeal means. 3,720,293, Cl. 188-73.500.

Hilden, Richard H., to Dicomed Corporated. Image display system. 3,720,859, Cl. 315-23.000.

Hilton, Charles T., Jr.: *See*—
Gorcik, Stanley W.; Kamysz, Richard A.; Hilton, Charles T., Jr.; and Faltz, John W., 3,720,874.

Hini, Paul: *See*—
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Hinkley, David F.: *See*—
Peister, Karl; Sletzinger, Meyer; and Hinkley, David F., 3,720,774.

Hino, Minoru: *See*—
Yagi, Yoshiharu; Hino, Minoru; Noguchi, Takanobu; Wada, Motomu; Yasuno, Kiyoshi; Sota, Kou; Ito, Nobuo; and Nakai, Yasuto, 3,720,652.

Hirayama, Chikara; and Maniero, Daniel A., to Westinghouse Electric Corporation. Process for producing pyrolytic graphite carbon and graphite. 3,720,499, Cl. 423-448.000.

Hire, Charles John; and Luke, George C., to Fasco Industries, Inc. Thermostat with overload indicator. 3,720,899, Cl. 337-348.000.

Hirst, Robert G.; and Desnoyers, George J., to General Electric Company. Insulating coating and method of making the same. 3,720,549, Cl. 148-6.160.

Hitachi Kasei Kogyo Kabushiki Kaisha: *See*—
Muta, Akinori; Hayakawa, Yukio; and Manaka, Makoto, 3,720,740.

Hitachi, Ltd.: *See*—
Hashimoto, Toshio; and Tanabe, Isao, 3,720,143.

Hitchcock, John Clement: *See*—
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Hobart, James L.; and Jarrett, Steven M., to Coherent Radiation. Laser photocoagulator. 3,720,213, Cl. 128-395.000.

Hobgood, George W., Jr.: *See*—
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Hoerner Waldorf Corporation: *See*—
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Hoesch Aktiengesellschaft: *See*—
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Hoffmann-La Roche Inc.: *See*—
Metlesics, Werner; and Sternbach, Leo Henryk, 3,720,720.

Hofmann, Henry Robert, to Telephone Laboratories, Incorporated. Supervisory circuit arrangement for telephone subscriber lines. 3,720,793, Cl. 179-18.0hb.

Hohen, Hans; and Bernstein, Jack, to Squibb, E. R., & Sons, Inc. Pyrazolo [3,4-b] pyridine-5-carboxamides. 3,720,675, Cl. 260-268.00c.

Hohenloher Schulmobelfabrik Schaffitzel KG: *See*—
Bergmann, Rainer; and Fleischmann, Klaus, 3,720,442.

Holman, Norman W., Jr. Artificial heart. 3,720,485, Cl. 417-413.000.

Holson Company, The: *See*—
Holson, Sheldon, 3,720,130.

Holson, Sheldon, to Holson Company, The. Chatterless photo album page. 3,720,130, Cl. 40-104.180.

Honeywell Inc.: *See*—
Aagard, Roger L., 3,720,924.
Chen, Di; and Zook, James David, 3,720,923.

Lee, Tzuo-Chang; and Zook, James David, 3,720,453.
Honjo, Satoru; and Tamai, Yasuo, to Xerox Corporation. Electrophotographic paper having an inorganic colloidal oxide coating. 3,720,514, Cl. 96-1.500.
Honma, Kimiyasu, to Kabushiki Kaisha Audio-Technica. Multichannel pickup cartridge. 3,720,796, Cl. 179-100.41k.
Hopkins, Walker L.; and Edwards, Richard R., to Texaco Inc. Method for controlling a cascade system. 3,720,730, Cl. 260-683.580.
Horgan, Stephen W.: *See—*
Albrecht, William L.; Fleming, Robert W.; and Horgan, Stephen W., 3,720,680.
Horizons Incorporated: *See—*
Fotland, Richard A., 3,720,806.
Horn, Robert F., to Eastman Kodak Company. Apparatus for separating and feeding exposed film sheets from a magazine into a film processor. 3,720,408, Cl. 271-18.00r.
Horney, Ronald E.; and Jackson, Hiram T., to Biogenics Company, Inc., mesne. Deodorizing and sewage treatment formulation. 3,720,606, Cl. 210-11.000.
Howald, Werner E.: *See—*
Collinson, Eric S.; and Howald, Werner E., 3,720,058.
Howell, Bryan Gordon: *See—*
Rayner, Adrien Patrick; and Howell, Bryan Gordon, 3,720,367.
Howland, Leland L.: *See—*
Martin, Robert L.; Howland, Leland L.; and Eichinger, Le Roy J., 3,720,842.
Hoyer, Georg-Alexander; and Roder, Kurt, to Schering AG. Fungicidal sulfinylcyanoisothiazoles. 3,720,769, Cl. 424-270.000.
Hrabe, Delmer W.: *See—*
Barrett, Frederick B.; Nielsen, Peter A.; and Hrabe, Delmer W., 3,720,394.
Hrubecky, Frederick J., to Kimberly-Clark Corporation. Disposable garment and method and apparatus for making same. 3,719,955, Cl. 2-243.00r.
Hubbard, Charles L., to Olin Corporation. Plastic shot shell wad. 3,720,171, Cl. 102-95.000.
Hubelbank, Mark: *See—*
Fox, Henry L.; and Hubelbank, Mark, 3,720,940.
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., to Caterpillar Tractor Company. High pressure implement hydraulic circuit. 3,720,221, Cl. 137-112.000.
Hughes Aircraft Company: *See—*
Ajioka, James S., 3,720,953.
Frohock, Millard M., Jr.; Riley, Michael A.; and French, William E., 3,720,131.
Rowlette, John J., 3,720,869.
Wilmot, Richard D.; Bradshaw, Oscar G.; and Wiggins, David G., 3,720,942.
Hukki, Risto, to Van Saum, Kennedy, Corporation. Pneumatic classifier with grating. 3,720,307, Cl. 209-10.000.
Hulen, Claude K. Automatic line-up table. 3,719,997, Cl. 33-80.000.
Hunter, Edwin J., to Toro Manufacturing Corporation. Apparatus and method for drilling an arcuate bore from ground surface under an obstruction to ground surface. 3,720,272, Cl. 175-61.000.
Hunter, William W., Jr. Injectable radio-pharmaceutical scanning agent and preparation. 3,720,761, Cl. 424-1.000.
Hurley, Edward, Jr.: *See—*
Norton, Charles J.; and Hurley, Edward, Jr., 3,720,710.
Hurtig, Gunnar, III, to Kinetic Technology, Inc. Filter network having negative feedback loops. 3,720,881, Cl. 330-107.000.
Hurtig, Roy Eugene; Geri, Don Winston; and Becker, Paul Horst, to Memorex Corporation. Diazo film developer. 3,720,150, Cl. 95-94.00g.
Hurtle, Richard LaVerne: *See—*
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Husband, Edwin H.: *See—*
Watson, William J.; and Husband, Edwin H., 3,720,920.
Huson, Gale: *See—*
Sauer, Leo Peter; and Huson, Gale, 3,720,158.
Hutar, Laddie F. Compact device for the multidimensional presentation of qualitative and quantitative data. 3,720,008, Cl. 35-24.00r.
Hutar, Laddie F. Device for the multidimensional presentation of qualitative and quantitative data. 3,720,009, Cl. 35-24.00r.
Hutchison, Stanley O., to Chevron Research Company. High pressure jet well cleaning. 3,720,264, Cl. 166-311.000.
Huthmann, Erich, to Keller Ofenbau GmbH. Method and apparatus for the drying of green ceramic and other materials. 3,720,003, Cl. 34-72.000.
Hutogepayar-Jasgbereny: *See—*
Garay, Lajos; Urban, Gabor; Romhanyi, Andras; and Sisa, Laszlo, 3,720,028.
Igata, Toyonori, to Pioneer Electronic Corporation. Record-changer spindle. 3,720,414, Cl. 274-10.00s.
Ihara, Hisato: *See—*
Toda, Hideo; Shimizu, Shigeki; and Ihara, Hisato, 3,720,618.
Iioka, Isao: *See—*
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Iizuka, Yasuhiro: *See—*
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Ilford Limited: *See—*
Rutter, Peter William, 3,720,035.
Illarionov, Velizary Semenovich; and Kostin, Vadim Alexeevich, to Ivanovsky Nauchno-Issledovatelsky Experimentalno Konstruktorsky Mashinostroitelny Institut. Arrangement for eliminating distortions of weft threads in fabric. 3,719,975, Cl. 26-51.300.
Illinois Tool Works Inc.: *See—*
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Imoto, Saburo; Ohara, Osamu; Nakamoto, Hisashi; Tanaka, Hisashi; and Ueeda, Ryuhei, to Kuraray Co., Ltd. Method of manufacturing a copolymer of a C_4 olefin with maleic anhydride. 3,720,651, Cl. 260-78.50r.
Imperial Chemical Industries Limited: *See—*
Bowie, Raymond Alexander, 3,720,673.
Cox, Terence; and Featherstone, William, 3,720,717.
Mansfield, Geoffrey Harry; and Watts, Malcolm Lehany, 3,720,600.
Inderhees, John A., to Avco Corporation. Optical field curvature corrector. 3,720,454, Cl. 350-7.000.
Industrie Pirelli S.p.A.: *See—*
Longoni, Sergio; and Portinari, Antonio, 3,720,557.
Inoue, Eiichi; Ueda, Yasuo; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Liquid developer for electrophotography containing the reaction product of a dyestuff and a fatty acid. 3,720,619, Cl. 252-62.100.
Inoue, Shunichi: *See—*
Yamaguchi, Tetsuro; Saito, Yuichi; Nishino, Yoshio; and Inoue, Shunichi, 3,720,512.
Institut de Recherche WOOG: *See—*
Jousson, Pierre J.; and Moret, Michel, 3,720,486.
Institutul de Cercetari Technologice Pentru Constructii de Masini: *See—*
Draghicescu, Antoaneta M.; and Radoi, Aurel C., 3,720,596.
International Business Machines Corporation: *See—*
Bruce, George D.; Davidge, Ronald V.; Fowler, Raymond L.; Hobgood, George W., Jr.; Locklar, Henry C., Jr.; and Cleave, George W., 3,720,465.
Chang, Hsu, 3,720,928.
Franaszek, Peter A.; Grossman, David D.; and Will, Peter M., 3,720,875.
Lamoureux, William Roger, 3,720,919.
Schools, Rodman S.; and Sincerbox, Glenn T., 3,720,921.
Thompson, William A., 3,720,598.
Zarowin, Charles B., 3,720,877.
International Mechanical Vibration Laboratory, Inc.: *See—*
Sakuraba, Hirosi, 3,720,110.
International Paper Company: *See—*
Roymoulik, Sunanda K., 3,720,577.
International Telephone and Telegraph Corporation: *See—*
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Inventa A.G. fur Forschung und Patentverwertung: *See—*
Schultze, Hans Joachim; and Henn, Ruthild, 3,720,650.
Iowa University Research Foundation, Inc.: *See—*
Quick, Graeme R., 3,720,051.
Irish, Edwin M., Jr., to Erin Industries, Inc. Tamper proof bottle cap. 3,720,343, Cl. 215-38.00a.
Irwin, Arthur S., to TRW Inc. Method of making linear motion antifriction bearings. 3,719,979, Cl. 29-148.40a.
Isaka, Toshiyuki: *See—*
Shinohara, Yoshiyuki; and Isaka, Toshiyuki, 3,720,716.
Isei, Masayuki: *See—*
Kabayama, Sukeaki; Kume, Masahiro; Katou, Akira; Yamada, Susumu; and Isei, Masayuki, 3,720,798.
Ishida, Shuichi: *See—*
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Ishii, Shozo, to Chugai Seiyaku Kabushiki Kaisha. Preparation for reducing cerebral edema and process of preparing same. 3,720,763, Cl. 424-95.000.
Ishii, Yoshikazu; Hayashi, Masamichi; and Tanaka, Shunichi, to Victor Company of Japan, Limited. Omni-directional globular speaker system. 3,720,787, Cl. 179-1.00e.
Ishizaka, Sunao; and Takahashi, Minoru, to Nippon Kogaku K.K. Light shielding device for interchangeable lens camera. 3,720,149, Cl. 95-44.000.
Isobe, Takehiro; Shimazu, Toshio; Ogawa, Koji; Arake, Yukio; Wakamatsu, Aizu; and Hashimoto, Tatsuji, to Nisso Smelting Co., Ltd. Compression resistant zinc base alloy with high wear resistance. 3,720,510, Cl. 75-178.0am.
Ito, Nobuo: *See—*
Yagi, Yoshiharu; Hino, Minoru; Noguchi, Takanobu; Wada, Motomu; Yasuno, Kiyoshi; Sota, Kou; Ito, Nobuo; and Nakai, Yasuto, 3,720,652.
Ivanko, Michael F., to Singer Company, The. Chainstitch conversion device for lockstitch sewing machines. 3,720,178, Cl. 112-168.000.
Ivanov, Ivan Dachev. Apparatus for and method of replacing cables in multicable lifting devices. 3,720,291, Cl. 187-20.000.
Ivanovsky Nauchno-Issledovatelsky Experimentalno Konstruktorsky Mashinostroitelny Institut: *See—*
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Iwamoto, Toshiaki: *See—*
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Iwasaki, Kiyotoshi: *See—*
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Izawa, Nobuharu; Kikuyama, Munetsugu; Toyoshima, Hiroshi; and Yamamoto, Ryuji, to Teijin Limited. Process for producing crimped polyester filaments. 3,719,976, Cl. 28-72.140.
Izawa, Nobuo; Iizuka, Yasuhiro; and Kubota, Yoshiaki, to Kanegafuchi Boseki Kabushiki Kaisha. Method for producing polyesters from benzendicarboxylic acid and alkylene oxide. 3,720,649, Cl. 260-75.00m.
Izumi, Kaichi; and Watanabe, Takao, to Kao Soap Co., Ltd. Oil-soluble rust preventive composition. 3,720,615, Cl. 252-33.000.
Jackson, Harry Y.; Walker, Charles C.; and Ramoska, John, to Eaton Yale & Towne, Inc. Hoist having yielding means for load limiting. 3,720,077, Cl. 64-29.000.
Jackson, Hiram T.: *See—*
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Jacobs, James W., to General Motors Corporation. Means for rapidly heating interior of a motor vehicle. 3,720,372, Cl. 237-12.30b.
Jacobs, Norman A.: *See—*
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Jakobsen, Kjell Mossvoll. Opening device for cans. 3,720,348, Cl. 220-54.000.
James, David Richard, to Murray Curvex Printing Limited. Apparatus for decorating rotatable articles. 3,720,162, Cl. 101-39.000.
James, Ralph, Jr.: *See—*
Shelton, Marcus H.; and James, Ralph, Jr., 3,720,742.
Jamison, Saunders E.: *See—*
Berardinelli, Frank M.; and Jamison, Saunders E., 3,720,641.
Jampy, Pierre; Bouix, Henri; and Armand, Rene. Infantry weapon adapted to fire a plurality of cartridges simultaneously. 3,720,133, Cl. 89-126.000.
Janes, Norman F.: *See—*
Elliott, Michael; and Janes, Norman F., 3,720,703.
Jansen, Robert J., to Westinghouse Electric Corporation. Cold plate and drain design. 3,720,074, Cl. 62-272.000.
Jardinier, Pierre; and Simonnot, Jack, to Societe d'Etudes et de Recherches de Ventilation et d'Aeraulique. Automatic fire-spread preventer valve for ventilation ducts. 3,720,153, Cl. 98-86.000.
Jarrett, Steven M.: *See—*
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Jarvis, Howell R., to Petrolite Corporation. Ready-to-use lead sulfide catalyst. 3,720,627, Cl. 252-430.000.
Jeger, Oskar: *See—*
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Jelinek, Jerry G.; and Reinsch, Edward, to Parker-Hannifin Corporation. Gasket. 3,720,420, Cl. 277-180.000.
Jepsen, Tage L. B., to Basic Incorporated. Heavy liquid separation of brucite from associated minerals of brucitic ores. 3,720,308, Cl. 209-11.000.
Jirkovsky, Ivo L., to American Home Products Corporation. Derivatives of 6-oxo-1-cyclohexene-1-carboxamide. 3,720,711, Cl. 260-557.00r.
Joco Incorporated: *See—*
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Johansson, Stig G. O.: *See—*
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Johnson & Johnson: *See—*
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Mayer, Warren C., 3,720,573.
Johnson, Bruce K.; and Shelton, William A., to Polaroid Corporation. Portrait camera having synchronized flash illumination source. 3,720,145, Cl. 95-11.50r.
Johnson, Edna F.: *See—*
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Johnson, Theodore B.; Cole, William T., Jr.; and Stamm, Orval M., to United States of America, Army, mesne. Incendiary projectile for smooth bore special purpose individual weapon. 3,720,169, Cl. 102-90.000.
Johnson, Wilbur D.; and Johnson, Edna F. Awning fixture. 3,720,438, Cl. 296-23.00r.
Johnston, Harry R. Apparatus for selectively actuating passenger safety devices in vehicles. 3,720,426, Cl. 280-150.0ab.
Johnston, Laird E.: *See—*
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Johnston, Mack S., to Draft Systems, Inc., mesne. Portable beer siphon device. 3,720,355, Cl. 222-400.700.
Jones, Edward W., to Pioneer Laboratories, Inc. Method and apparatus for packaging medicated gauze pads. 3,720,037, Cl. 53-21.0fc.
Jones, Peter Hadley; and Martin, Yvonne Connolly, to Abbott Laboratories. Aspergillic acid as an antihypertensive agent. 3,720,768, Cl. 424-250.000.
Jones, Ralph Edwin, to Thorn Electrical Industries Limited. Magnetic core memories. 3,720,929, Cl. 340-174.0pa.
Jordan, Russell T. Cement having improved color. 3,720,528, Cl. 106-90.000.
Jordan, Russell T. Cements. 3,720,529, Cl. 106-90.000.
Jostens, Inc.: *See—*
Voegele, Lawrence R., 3,720,397.
Jousson, Pierre J.; and Moret, Michel, to Institut de Recherche WOOG. Hydraulic actuators. 3,720,486, Cl. 417-440.000.
Juhos, Eva Th., to Beckman Instruments, Inc. Method for high resolution zone electrophoresis. 3,720,593, Cl. 204-180.00g.
Junger, Hans; Kotzsch, Hans-Joachim; Vahlensieck, Hans-Joachim; and Weissenfels, Franz, to Dynamit Nobel Aktiengesellschaft. Use of modified resins as binding agents for mineral substances. 3,720,642, Cl. 260-37.00r.
Junghans, Klaus; and Ropke, Horst, to Schering A.G. Partial electrochemical reduction or 19-nor-delta 1,3,5(10)-steroids. 3,720,694, Cl. 260-397.500.
Juraschek, Richard: *See—*
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Justus, Ben: *See—*
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Kaatz, Herbert W.; Small, Charles B.; and Branch, Arthur, to Airborne Mfg. Co. Method of and apparatus for controlling a deicer boot system. 3,720,388, Cl. 244-134.00a.
Kabayama, Sukeaki; Kume, Masahiro; Katou, Akira; Yamada, Susumu; and Isei, Masayuki, to Sumitomi Electric Industry Company Ltd. and Nissin Electric Company, Ltd. Vacuum-type current interrupter. 3,720,798, Cl. 200-144.00b.
Kabushiki Kaisha Audio-Technica: *See—*
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Kabushiki Kaisha Kitachi Seisakusho: *See—*
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Kaesemeyer, Carl W., to Cincinnati Milacron Inc. Rotary work driver for machine tools. 3,720,124, Cl. 82-40.000.
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Kahale, Abed G.; Yatsushiro, Kenji; and Wielgus, Thaddeus S., to Controls Company of America. Warning signal relay and system. 3,720,936, Cl. 340-261.000.
Kahanic, Francis P., to Teletype Corporation. Fluorescent lamp igniting circuit. 3,720,861, Cl. 315-101.000.
Kail, Denis Harold: *See—*
Boram, Frank; and Kail, Denis Harold, 3,720,006.
Kaiser, Robert George, to Clark & Vicario Corporation. Stabilizing papermaking system cleaner operation. 3,720,315, Cl. 209-211.000.
Kalfsbeck, James: *See—*
Goodrich, Robert S., 3,720,014.
Kalfsbeck, Peter: *See—*
Goodrich, Robert S., 3,720,014.
Kali-Chemie Aktiengesellschaft: *See—*
Massonne, Joachim; Kreutz, Rolf; and Friedrich, Heinz, 3,720,748.
Kalle Aktiengesellschaft: *See—*
Seibel, Markus; and Thoese, Klaus, 3,720,539.
Kalopissis, Gregoire, to Societe Anonyme dite: L'Oreal. Colored interpolymers of an epoxy compound, vinylpyrrolidone and vinyl acetate. 3,720,653, Cl. 260-80.720.
Kamborian, Jacob S.: *See—*
Boucher, Raymond, 3,719,964.
Kamihigoshi, Tutomu: *See—*
Wada, Hiroyuki; Kawakami, Yasumasa; and Kamihigoshi, Tutomu, 3,720,722.
Kaminski, William; and Kogelnik, Herwig Werner, to Bell Telephone Laboratories, Incorporated. Lensless flying-spot scanner for generating color signals. 3,720,782, Cl. 178-5.40r.
Kamner, Haim J., to Westinghouse Air Brake Company. Loading machine. 3,720,331, Cl. 214-90.00r.
Kamysz, Richard A.: *See—*
Gorcik, Stanley W.; Kamysz, Richard A.; Hilton, Charles T., Jr.; and Faltz, John W., 3,720,874.
Kaneda, Isamu: *See—*
Suzuki, Shigeyuki; Kumamoto, Kotaro; Kaneda, Isamu; and Sakai, Shoushiro, 3,720,624.
Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Izawa, Nobuo; Iizuka, Yasuhiro; and Kubota, Yoshiaki, 3,720,649.
Kannegiesser, Herbert; and Juraschek, Richard. Method and apparatus for gluing flat shaped textile articles. 3,720,563, Cl. 156-306.000.
Kao Soap Co., Ltd.: *See—*
Izumi, Kaichi; and Watanabe, Takao, 3,720,615.
Matsuda, Kazuo; Tanaka, Yoshiaki; and Sakai, Takeyo, 3,720,719.
Kapp, Ernst; and Becker, Paul, to Metallgesellschaft. Process for preparing hydrogen or nitrogen and hydrogen under pressure. 3,720,625, Cl. 252-377.000.
Kappius, Friedrich: *See—*
Vieweg, Gunther; Kappius, Friedrich; Ott, Hans; and Wenk, Jurgen, 3,720,852.
Kar Products, Inc., mesne: *See—*
Reisner, Sam, 3,719,992.

Kasahara, Ichiro; and Yamaguchi, Hideki, to Nihon Denshi Kabushiki Kaisha. Method for measuring plate thickness. 3,720,471, Cl. 356-108.000.

Kaser, Arthur, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Inner shell and supporting structure for use in a nuclear reactor having a reactor core and a reactor tank spaced around said core. 3,720,581, Cl. 176-87.000.

Kaspers, Helmut: *See—*
Widdig, Arno; Kuhle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, 3,720,682.

Kasten, Roy F., Jr.: *See—*
Atlee, Zed J.; and Kasten, Roy F., Jr., 3,720,853.

Katou, Akira: *See—*
Kabayama, Sukeaki; Kume, Masahiro; Katou, Akira; Yamada, Susumu; and Isei, Masayuki, 3,720,798.

Katsumata, Takuma; and Takahashi, Hisao, to Mitsubishi Jukogyo Kabushiki Kaisha. Dry and wet heater for combined use. 3,720,079, Cl. 68-6.000.

Katsuyama, Yoshihisa, to Nippon Kogaku K.K. Device for oscillating image plane on the side of photoelectric element in automatic focusing device. 3,720,151, Cl. 95-44.00r.

Kaupin, William B., to Carter, William, Company, The. Absorbent panty. 3,720,212, Cl. 128-288.000.

Kawakami, Yasumasa: *See—*
Wada, Hiroyuki; Kawakami, Yasumasa; and Kamihigoshi, Tutomu, 3,720,722.

Kazmierski, Elias A.: *See—*
Coulter, Earl E.; Hemker, Fritz L.; and Kazmierski, Elias A., 3,720,351.

Kearney & Trecker Corporation: *See—*
Merner, Kenneth R.; and Stobbe, Richard E., 3,720,135.

Kedsell Company: *See—*
Godin, Edmund J., 3,720,449.

Keel, Beat G.: *See—*
Perkins, Robert L.; and Keel, Beat G., 3,720,932.

Kegler, Cyril L., to Bishop Buffets, Inc. Conveyor system for trays. 3,720,302, Cl. 198-127.000.

Kehlhagen, Walter. Step motor control circuit. 3,720,864, Cl. 318-138.000.

Keldany, Rachid, to Ruti Machinery Works Ltd. Arrangement for holding weft threads. 3,720,237, Cl. 139-170.300.

Keller Ofenbau GmbH: *See—*
Huthmann, Erich, 3,720,003.

Keller, Toni W.; Laukien, Gunther R.; and Tschopp, Werner H., to Spectrospin AG. Method for fourier analysis of interference signals. 3,720,816, Cl. 235-151.300.

Kelley, Douglas M., to Euclid, Inc. Rear dumping vehicle. 3,720,446, Cl. 298-22.00r.

Kelley, Paul L.; Fisher, Robert Alan; and Gustafson, T. Kenneth, to Massachusetts Institute of Technology. Method and apparatus for compression of optical laser pulses. 3,720,884, Cl. 331-94.500.

Kelsey-Hayes Company: *See—*
Ruzmus, Walter J., 3,720,239.

KemaNord AB: *See—*
Norback, Hakan, 3,720,700.

Kennametal Inc.: *See—*
McKenry, Robert J.; and Oaks, Seibert S., 3,720,273.

Kenotech, Inc.: *See—*
Rochester, James R.; Hamilton, Fenton D.; Navarro, Felipe; and McCurdy, Neal R., 3,720,822.

Kent Instruments Limited: *See—*
Wilson, Haydn, 3,720,594.
Zanker, Klaus Joachim, 3,720,104.

Kern, Loyd R., to Atlantic Richfield Company. Bearing device and method for using same. 3,720,271, Cl. 175-57.000.

Kerwin, Robert Eugene: *See—*
Maydan, Dan; Cohen, Melvin Irwin; and Kerwin, Robert Eugene, 3,720,784.

Khetani, Bhupendra N., to Monsanto Company. Plastic container for pressurized materials-A. 3,720,339, Cl. 215-1.00c.

Kibort, Tadeusz: *See—*
Chmielewski, Andrzej; Czerniak, Eligiusz; and Kibort, Tadeusz, 3,720,275.

Kiefer, Heinz. Testing device for testing oscillation absorbers of vehicles. 3,720,091, Cl. 73-11.000.

Kijkhuis, Christiaan G. M.: *See—*
Barake, Franciscus X. C. M.; Kijkhuis, Christiaan G. M.; and Logemann, Johan D., 3,720,548.

Kikuyama, Munetsugu: *See—*
Izawa, Nobuharu; Kikuyama, Munetsugu; Toyoshima, Hiroshi; and Yamamoto, Ryuji, 3,719,976.

Kilpatrick & Company: *See—*
Chandler, Robert B., 3,720,258.

Kimberly-Clark Corporation: *See—*
Hrubecky, Frederick J., 3,719,955.
Stumpf, Robert J., 3,720,554.

Kimble, Victor W., to Deering Milliken Research Corporation. Endless reinforcement and method for producing same. 3,720,569, Cl. 161-57.000.

Kinetic Technology, Inc.: *See—*
Hurtig, Gunnar, III, 3,720,881.

King, John; and Lord, George Harry, to Fisons Pharmaceuticals Limited. Pharmaceutically active bis-carboxychromone compounds. 3,720,690, Cl. 260-345.200.

King, Leonard H.: *See—*
Moll, Oswin C., 3,720,783.

King, Paul A.: *See—*
Wartman, Lloyd H.; and King, Paul A., 3,720,216.

King, Robert David, to Triplex Safety Glass Comapny Limited. Transparent articles. 3,720,541, Cl. 117-211.000.

Kirby, Peter; and Hass, Duane K., to Shell Oil Company. Furan and thiophene substituted vinyl phosphates. 3,720,687, Cl. 260-332.500.

Kiriazides, Demosthenes K.: *See—*
Chatterji, Arun K.; Custozzo, Marianne; Kiriazides, Demosthenes K.; Russell, John J., Jr.; and Serio, John P., 3,720,617.

Kirshsiper, Walter. Hydraulic pressure transformer. 3,720,484, Cl. 417-401.000.

Kirst, Paul-Gerhard: *See—*
Bergmeister, Eduard; Kirst, Paul-Gerhard; Nitzsche, Siegfried; Pirson, Ewald; and Roth, Michael, 3,720,538.

Kisaki, Hisashi: *See—*
Sakomura, Toshio; Kisaki, Hisashi; Tada, Takashi; and Mabuchi, Shunsuke, 3,720,704.

Kitago, Takanobu: *See—*
Fujisaki, Yoshisato; Fukuma, Noboru; Chayamiti, Hiroshi; Okamoto, Toshio; Seizaburo, Shigeta; and Kitago, Takanobu, 3,720,576.

Klanderman, Bruce H.; and Faber, Jan W. H., to Eastman Kodak Company. 9,10-Bridged anthracene compounds. 3,720,701, Cl. 260-475.0fr.

Klaphaak, Daniel J.; and Barnes, Lawrence G., to Atomization Systems Inc. Method centrifugal atomization. 3,720,737, Cl. 264-8.000.

Klein, John, to Warner & Swasey Company, The. Direct numerical control system. 3,720,814, Cl. 235-151.110.

Klein, Jorge: *See—*
Stout, Don R.; and Klein, Jorge, 3,720,338.

Klink, Wolf-Dieter. Safety belt device for occupants of motor vehicles. 3,719,972, Cl. 24-193.000.

Kloren, Ulrich: *See—*
Friedrichs, Josef; Schropfer, Karl Heinrich; and Kloren, Ulrich, 3,720,429.

Knapsack Aktiengesellschaft: *See—*
Muller, Fritz; Werner, Hugo; Werner, Bruhl; and Thummler, Ursus, 3,720,506.

Knoche, Wilhelm, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Autoclave for pressure jump relaxation measurement. 3,720,094, Cl. 73-37.000.

Kockum Soderhamn Aktiebolag: *See—*
Mellgren, Per Gustaf, 3,720,248.

Koehring Company: *See—*
Briggs, Eugene C., 3,720,496.

Kogelnik, Herwig Werner: *See—*
Kaminski, William; and Kogelnik, Herwig Werner, 3,720,782.

Kohler, Ludwig, to Siemens Aktiengesellschaft. Apparatus for electrolytic polishing of rod-shaped workpieces. 3,720,595, Cl. 204-206.000.

Koizumi, Yutaka, to Kabushiki Kaisha Ricoh. Slit exposure optical system for reproducing apparatus or the like. 3,720,466, Cl. 355-8.000.

Kollmeyer, Herman R., to United States of America, Navy. Automatic spring rate plotter. 3,720,101, Cl. 73-161.000.

Koloc, Paul M., to United States of America, Navy. Transverse flow carbon dioxide laser system. 3,720,885, Cl. 331-94.500.

Kolyer, John M.; and Kveglis, Albert A., to Allied Chemical Corporation. Compositions of anionicially polymerized polycaprolactam plasticized with hexamethylphosphorotriamide. 3,720,638, Cl. 260-30.60r.

Kondo, Toshihito: *See—*
Masunaga, Kunihiko; Shinohara, Hiroshi; and Kondo, Toshihito, 3,720,589.

Kongelka, Robert M. Loop setting means for a motion picture projector. 3,720,362, Cl. 226-36.000.

Konig, Josef; and Schiefer, Erich, to Davy-Ashmore Aktiengesellschaft. Process for the direct polymerization of acrylonitrile in dimethyl formamide. 3,720,745, Cl. 264-206.000.

Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V.: *See—*
Van Wierst, Wilhelmus Lambertus, 3,720,173.

Konopka, Edward Alexander; and Gelzer, Justus Melchior, to Ciba-Geigy Corporation. Synergistic preparation of rifampicin and penicillin G. 3,720,764, Cl. 424-114.000.

Kopacki, Adam F.; and Deatcher, John H., to Stauffer Chemical Company. PVC compositions containing carboxylic acid anhydride copolymers. 3,720,734, Cl. 260-899.000.

Korenicki, William John: *See—*
Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, 3,720,229.

Korner, Peter: *See—*
Reinsch, Herbert; and Korner, Peter, 3,720,461.

Kortman, Joe M.: *See—*
Schulein, Joseph; and Kortman, Joe M., 3,720,933.

Kosinski, Joseph W.: *See—*
Better, Bernard R.; Kosinski, Joseph W.; and Hain, Edward, 3,720,116.

Kosonocky, Walter Frank, to RCA Corporation. Charge coupled memory. 3,720,922, Cl. 340-173.00r.

Kostin, Vadim Alexeevich: *See*—
Illarionov, Velizary Semenovich; and Kostin, Vadim Alexeevich, 3,719,975.
Kotzsch, Hans-Joachim: *See*—
Junger, Hans; Kotzsch, Hans-Joachim; Vahlensieck, Hans-Joachim; and Weissenfels, Franz, 3,720,642.
Kovach, Julius Louis, to North American Carbon, Incorporated. Method for high efficiency filtering system. 3,720,043, Cl. 55-74.000.
Kozlowski, Robert L. Device for selectively dispensing liquids. 3,720,352, Cl. 222-132.000.
Kraft, Rupert; and Zimmer, Johannes. Device for surface treatment of material. 3,720,160, Cl. 100-160.000.
Kramer, Stanley I.; and Larsen, Gordon R., to Fairchild Hiller Corporation. Signal system for jamming detection systems utilizing signal correlation. 3,720,944, Cl. 393-18.00e.
Kranz, Richard, to Tension Envelope Corporation. Die test stand. 3,720,126, Cl. 83-344.000.
Krausser, Alfred: *See*—
Krausser, Heinz; and Krausser, Alfred, 3,719,998.
Krausser, Heinz; and Krausser, Alfred, to Edelmann, Carl, GmbH. Target evaluation. 3,719,998, Cl. 33-174.00r.
Krefter, August: *See*—
Stog, Wilhelm; and Krefter, August, 3,720,474.
Krenzer, John; and Richter, Sidney B., to Velsicol Chemical Corporation. 5-Halo-1,2,4-thiadiazoles. 3,720,684, Cl. 260-300.80d.
Kreutz, Rolf: *See*—
Massonne, Joachim; Kreutz, Rolf; and Friedrich, Heinz, 3,720,748.
Kriz, Ferdinand J., to Producto Machine Company, The. Three-D electrode machining tool. 3,720,804, Cl. 219-59.00v.
Krizek, Reynold J.: *See*—
Bunchak, William G.; and Krizek, Reynold J., 3,720,278.
Krodel, Otto, to Daimler-Benz Aktiengesellschaft. Method and apparatus for attaching a molding between the frame of a vehicle and an exposed edge of a window pane installed in the frame. 3,720,030, Cl. 52-400.000.
Kron, Reuben E., to University of Pennsylvania, The; trustees. Apparatus and method for measuring mammalian blood viscosity. 3,720,097, Cl. 73-55.000.
Kropp, Walter: *See*—
Schurawski, Siegfried; and Kropp, Walter, 3,720,059.
Kubo, Mitsuo; and Nakajima, Shunichi, to Tokyo Shibaura Electric Co., Ltd. Apparatus for succesively taking out papers from a stack thereof. 3,720,409, Cl. 271-29.000.
Kubota, Yoshiaki: *See*—
Izawa, Nobuo; Iizuka, Yasuhiro; and Kubota, Yoshiaki, 3,720,649.
Kudirka, Alvydas A.; Burley, Elliott L.; and Moen, Robert H., to General Electric Company. Flow distribution apparatus. 3,720,046, Cl. 55-414.000.
Kuhle, Engelbert: *See*—
Widdig, Arno; Kuhle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, 3,720,682.
Kulander, Carl J. Vibration-dampening device for a floor-mounted vibrating mechanism. 3,720,392, Cl. 248-20.000.
Kumamoto, Kotaro: *See*—
Suzuki, Shigeyuki; Kumamoto, Kotaro; Kaneda, Isamu; and Sakai, Shoushiro, 3,720,624.
Kumaoka, Hiromu. Automatic sprinkling apparatus. 3,720,375, Cl. 239-210.000.
Kume, Masahiro: *See*—
Kabayama, Sukeaki; Kume, Masahiro; Katou, Akira; Yamada, Susumu; and Isei, Masayuki, 3,720,798.
Kunc, Frank C., to Scott Paper Company. Filter element. 3,720,574, Cl. 161-156.000.
Kupperman, Dennis I.: *See*—
Kupperman, Sam; and Kupperman, Dennis I., 3,720,016.
Kupperman, Sam; and Kupperman, Dennis I. Toy having slotted axle and elastic strip drive means latterally insertable therethrough. 3,720,016, Cl. 46-206.000.
Kupsky, George A., to Burroughs Corporation. Multi-position character display panel. 3,720,452, Cl. 316-24.000.
Kuraray Co., Ltd.: *See*—
Fukushima, Osamu; Nagoshi, Kazuo; and Iwamoto, Toshiaki, 3,720,631.
Imoto, Saburo; Ohara, Osamu; Nakamoto, Hisashi; Tanaka, Hisashi; and Ueeda, Ryuhei, 3,720,651.
Kurita Water Industries Limited, mesne: *See*—
Suzuki, Shigeyuki; Kumamoto, Kotaro; Kaneda, Isamu; and Sakai, Shoushiro, 3,720,624.
Kurle, Arthur R., to Halliburton Company. Parachute release device and method. 3,720,390, Cl. 244-149.000.
Kveglis, Albert A.: *See*—
Kolyer, John M.; and Kveglis, Albert A., 3,720,638.
Kyrias, George M. Automatic injection system. 3,720,211, Cl. 128-218.00a.
La Branche, Harvey W.: *See*—
Daniels, Charles J.; and La Branche, Harvey W., 3,720,415.
Labofina,SOC AN: *See*—
Vanderlinden,AndreJacquesEmle; dradzitzkyBlgiu; and Labofina,SOC AN, 3,720,707.
Lagasse, Joseph Louis, to Northern Electric Company Limited. Spiral head adjusting screw. 3,720,129, Cl. 85-9.00r.
Laing, Ingeborg: *See*—
Laing, Nikolaus; and Laing, Ingeborg, 3,720,198.
Laing, Nikolaus; and Laing, Ingeborg. Heat storage elements, a method for producing them and devices comprising heat storage elements. 3,720,198, Cl. 126-400.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Simonet, Guy, 3,720,042.
Laird, John D., to Avco Corporation. Intra-arterial blood pump. 3,720,200, Cl. 128-1.00d.
Lambert, John Robert, to Redment Engineering Company Limited. Transporter vehicles. 3,720,437, Cl. 296-1.00a.
Lamont, George Laurence, to Contract Cleaning Co., Pty. Limited. Combined floor-polisher and suction cleaner. 3,719,966, Cl. 15-385.000.
Lamoureux, William Roger, to International Business Machines Corporation. Photonically partitioned continuous gas envelope and transiently energized pilot discharge areas used in address selection of display firing. 3,720,919, Cl. 340-166.00r.
Landherr, Lawrence R.; and Prohaska, Karl J., to Milwaukee Cylinder Corporation. Automatically reversing, double acting fluid cylinder mechanism. 3,720,137, Cl. 91-279.000.
Landree, Raymond L., to Bendix Corporation, The. Depth-type filter for operation with high differential pressures across the filter. 3,720,323, Cl. 210-493.000.
Lang, Albert L.; and Smith, George A. W. Self-contained unauthorized entry alarm. 3,720,937, Cl. 340-283.000.
Lansky, Zdenek; and Malinowski, Lester W., to Parker Hannifin Corporation. Supersonic lubricator. 3,720,290, Cl. 184-55.00a.
Lapple, Charles E., to Donaldson Company, Inc. Centrifugal classifier. 3,720,313, Cl. 209-144.000.
Lapporte, Seymour J.; and Toland, William G., to Chevron Research Company. Methylene and oxymethylene bis-ester production. 3,720,706, Cl. 260-494.000.
Largman, Theodore, to Allied Chemical Corporation. Cycloalkanebisamides. 3,720,712, Cl. 260-558.00a.
Larribau, Etienne; Grubis, Bernard; and Sahores, Jean, to Societe Nationale des Petroles d'Aquitaine. X-ray spectrometry apparatus having a controlled X-ray source. 3,720,830, Cl. 250-51.500.
Larsen, Gordon R.: *See*—
Kramer, Stanley I.; and Larsen, Gordon R., 3,720,944.
Larson, Donald J.: *See*—
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., 3,720,221.
LaSalle Steel Company: *See*—
Gottschlich, Rudolf W., 3,720,087.
Latinen, George A.; deceased (by Latinen, May V.; administratrix), to Monsanto Company. Devolatilizer rotor assembly. 3,720,479, Cl. 416-198.000.
Latinen, May V.: *See*—
Latinen, George A., 3,720,479.
Laugherty, James R.: *See*—
Laugherty, Lorene; and Laugherty, James R., 3,720,304.
Laugherty, Lorene; and Laugherty, James R., to Avis Research, Inc. Disposable footprinter. 3,720,304, Cl. 206-46.00r.
Laukien, Gunther R.: *See*—
Keller, Toni W.; Laukien, Gunther R.; and Tschopp, Werner H., 3,720,816.
Lawrence, Mark F.; and Beecroft, William C., to Mark 50 Machinery Sales, Inc. Sawmill carriage setworks. 3,720,244, Cl. 83-523.000.
Lawsine, Leo. Signal processing apparatus. 3,720,952, Cl. 343-18.00e.
Le Seigneur, Pierre, to Thomson-CSF. Power amplifying device for amplitude modulated high frequency signals. 3,720,880, Cl. 330-29.000.
Le Tourneau, R. G., Inc.: *See*—
Molby, Lloyd A., 3,720,332.
Leacock, Ronald. Automatic machine tool. 3,720,475, Cl. 408-44.000.
Leary, David E.: *See*—
Caroselli, Remus F.; Dillon, James J.; and Leary, David E., 3,720,571.
Lechner, Walter Ludwig: *See*—
Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, 3,720,229.
Lectrolarm Custom Systems, Inc.: *See*—
Van Smith, William, 3,720,943.
Lee, Clarence M., to Zenith Radio Corporation. Multiple input voltage source power supply. 3,720,868, Cl. 321-47.000.
Lee, Larry E., to Murphy G. W., Industries, Inc. Pump piston. 3,720,140, Cl. 92-87.000.
Lee, Raymond, Organization, Inc., The: *See*—
Arnold, Edward S., 3,720,800.
Lee, Tzuo-Chang; and Zook, James David, to Honeywell Inc. Differential readout holographic memory. 3,720,453, Cl. 350-3.500.
Lee, Yoon Chai; and Trementozzi, Quirino A., to Monsanto Company. Bottle constructed of a blend of polymers from methacrylonitrile, monovinylidene and rubber compounds. 3,720,340, Cl. 215-1.00c.
Leeming, Peter Rodway: *See*—
Canas-Rodriguez, Antonio; and Leeming, Peter Rodway, 3,720,771.
Lehmann, Frank-Dieter, to Hauni-Werke Korber & Co., KG. Apparatus for separating selected cigarettes or analogous rod-shaped articles from a series of rapidly moving equidistant articles. 3,720,310, Cl. 209-74.000.
Lehmann, Werner: *See*—
Wanner, Karl; Schmidt, Wolfgang; Bleicher, Manfred; Sigg, Horst; Lehmann, Werner; and Burklin, Max, 3,720,269.

Lehner, Karl, to Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen. Process and apparatus for the continuous production of synthetic threads. 3,720,382, Cl. 242-35.50r.

Lematex, Inc.: *See—*
Leposavic, Wayne V., 3,720,938.

Leposavic, Wayne V., to Lematex, Inc. System for preventing erroneous data output signals from an electrical keyboard. 3,720,938, Cl. 340-365.00s.

Letchworth, Peter E., to Stauffer Chemical Company. Synergists insecticidal mixtures of O,O-dimethyl-O-(2-methoxy-4-cyanophenyl) phosphorathiate and 3, 4-methylene dioxyphenyl propynyloxy carbamates. 3,720,766, Cl. 424-210.000.

LeVelle, James A.: *See—*
Allen, William G.; LeVelle, James A.; and Schuh, Frank J., 3,720,267.

Levey, Gustave S., to Levey, Gustave S., mesne. Recirculating paint system or the like. 3,720,373, Cl. 239-127.000.

Levey, Gustave S., mesne: *See—*
Levey, Gustave S., 3,720,373.

Levinn, Robert N., to American Thermostat Corporation. Temperature-sensitive assist for temperature-controlled switch. 3,720,898, Cl. 337-95.000.

Lewis, James H.: *See—*
Duck, James; and Lewis, James H., 3,720,260.

Lewis, John C., to Park-Ohio Industries, Inc. Method and apparatus for inductively heat treating elongated workpieces. 3,720,803, Cl. 219-10.690.

Leyh, Harold F. Spud clamping device. 3,720,435, Cl. 294-88.000.

Liebman, Arno J. Body rubbing device. 3,720,205, Cl. 128-67.000.

Liggett & Myers Incorporated: *See—*
Norman, Vello; Bryant, Herman G., Jr.; and Williams, Thomas Blair, 3,720,214.

Lindblom, Karl Thore, to Ostbergs Fabriks AB. Arrangement for measuring the length of oblong objects. 3,720,247, Cl. 144-3.00d.

Linde Aktiengesellschaft: *See—*
Nasser, Gamal El Din; and Waldmann, Hans, 3,720,071.
Schurawski, Siegfried; and Kropp, Walter, 3,720,059.

Lion Hamigaki Kabushiki Kaisha: *See—*
Hatasa, Shigeyoshi; and Iioka, Isao, 3,720,762.

Lippitsch, Josef M.: *See—*
Fritz, Kurt; Lippitsch, Josef M.; and Lurf, Gunther, 3,720,259.

List, Ferdinand; and Alfs, Helmut, to Chemische Werke Huls Aktiengesellschaft. Production of phthalic anhydrode from phthalic acid. 3,720,692, Cl. 260-346.700.

Litton Business Systems, Inc.: *See—*
Frechette, Thomas E., 3,720,297.

Litton Systems, Inc.: *See—*
Parish, Hubert Gene; and Einstein, Bernard Ceasar, 3,720,535.

Liuzzo, Giuseppe: *See—*
Barba, Diego; D'Agostino, Candido; and Liuzzo, Giuseppe, 3,720,586.

Loch, Alphonse: *See—*
Loch, George N.; and Loch, Alphonse, 3,720,401.

Loch, George N.; and Loch, Alphonse. Plastic fence post. 3,720,401, Cl. 256-19.000.

Lochridge, Joe C., to Brown & Root, Inc. Pipeline laying operation with explosive joining of pipe sections. 3,720,069, Cl. 61-72.300.

Lockheed Aircraft Corporation: *See—*
Grove, Robert K.; and Sloma, Richard O., 3,720,044.

Locklar, Henry C., Jr.: *See—*
Bruce, George D.; Davidge, Ronald V.; Fowler, Raymond L.; Hobgood, George W., Jr.; Locklar, Henry C., Jr.; and Cleave, George W., 3,720,465.

Lodi, Frank, to Richco Plastic Company. Cable hanger and clamp. 3,719,971, Cl. 24-73.0pb.

Loeffler, Larry J., to Merck & Co., Inc. Treatment of a pathological fibrinolytic state in patients. 3,720,775, Cl. 424-319.000.

Logemann, Johan D.: *See—*
Barake, Franciscus X. C. M.; Kijkhuis, Christiaan G. M.; and Logemann, Johan D., 3,720,548.

Logue, James A., to Owens-Illinois, Inc. Television bulb with improved strength. 3,720,345, Cl. 220-2.10a.

Lohr, Manfred, to Hoesch Aktiengesellschaft. Hydro-pneumatic spring. 3,720,405, Cl. 267-64.000.

Long, Jasper J.; and Justus, Ben, to Optoelectronics, Inc. Vacuum tight lead throughs for dewar mounted infrared detectors. 3,719,990, Cl. 29-628.000.

Longoni, Sergio; and Portinari, Antonio, to Industrie Pirelli S.p.A. Process for lining conductive tubes with insulating material. 3,720,557, Cl. 156-156.000.

Loper, Robert J., to Trail-R-Signs. Signboard construction. 3,720,012, Cl. 40-140.000.

Lord, George Harry: *See—*
King, John; and Lord, George Harry, 3,720,690.

L'Oreal: *See—*
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Lorenzen, Heinz-Christen, to Hauni-Werke Korber & Co. KG. Apparatus for evaluating the output of machines for the production and/or processing of smokers products. 3,720,815, Cl. 235-151.130.

Ludoph, Hemmo Hermannes Johannes: *See—*
Van Doorne, Hubertus Josephus; and Ludoph, Hemmo Hermannes Johannes, 3,720,113.

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Hire, Charles John; and Luke, George C., 3,720,899.

Luksas, Anthony J., to Beatrice Foods Co. Preparation of a blue cheese flavored product. 3,720,520, Cl. 99-140.00r.

Lummus Company, The: *See—*
Sze, Morgan C.; and Kafes, Nicholas C., 3,720,729.

Lundin, Charles E., to Colorado Springs National Bank. Copper-lead alloy. 3,720,507, Cl. 75-135.000.

Lundin, Robert E.: *See—*
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Lurf, Gunther: *See—*
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Lustigue, Simon. Exothermic composition for use in steelworks and in foundries. 3,720,552, Cl. 149-3.000.

Lynn, Howard F.: *See—*
Chow, Henry; Faris, William R.; Lynn, Howard F.; and Payne, Delmar V., 3,720,945.
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Mabuchi, Shunsuke: *See—*
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Macaulay, Norman; and Ruus, Henn, to Moore Business Forms, Inc. Polymer gels and method of making same. 3,720,534, Cl. 117-36.200.

Macdowell, John F.: *See—*
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Mack, William T. Liquid confining and collecting apparatus. 3,720,062, Cl. 61-1.00f.

Mackenzie, Harold B. Discrete material transporting and dumping apparatus. 3,720,328, Cl. 214-38.00d.

Maestri, Bruno. Tool for driving and setting headless nails or metal tacks. 3,720,364, Cl. 227-109.000.

Magee, John E. Automatic elevator car positioning monitor. 3,720,292, Cl. 187-29.00r.

Maier, Peter: *See—*
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Mainhardt, Robert; Cochran, David L.; Deleray, Arthur L.; Fritzler, Gary L.; and Mawhinney, Robert C. Rotatable rocket having means for preventing flameout due to centrifugal force created during rotation thereof. 3,720,167, Cl. 102-34.400.

Majewski, Mieczyslaw Stanislaw. Plumb bob with interchangeable parts. 3,720,001, Cl. 33-392.000.

Makino, Toshiaki. Process for recovering and manufacturing silicic acid system pigment from alkali process pulp black liquor containing silicates. 3,720,531, Cl. 106-288.00b.

Malinowski, Lester W.: *See—*
Lansky, Zdenek; and Malinowski, Lester W., 3,720,290.

Mallory Electric Corporation: *See—*
Mallory, Marion, Jr., 3,720,194.

Mallory, Marion, Jr., to Mallory Electric Corporation. Ignition system. 3,720,194, Cl. 123-148.00e.

Manaka, Kazuo, to Broadview Chemical Corporation. Anaerobic sealant compositions. 3,720,656, Cl. 260-89.50n.

Manaka, Makoto: *See—*
Muta, Akinori; Hayakawa, Yukio; and Manaka, Makoto, 3,720,740.

Mangood Corporation: *See—*
Czyryk, Chester S., 3,720,954.

Mani, Inder, to Dow Chemical Company, The. Vinyl ester resins cured by ionizing radiation the presence of CBr_4. 3,720,592, Cl. 204-159.150.

Maniero, Daniel A.: *See—*
Hirayama, Chikara; and Maniero, Daniel A., 3,720,499.

Mansfield, Geoffrey Harry; and Watts, Malcolm Lehany, to Imperial Chemical Industries Limited. Cracking of hydrocarbons. 3,720,600, Cl. 208-47.000.

Manuali, Bertrand Claude Marcel Jean, to Centre National d'Etudes Spatiales. Diode switching arrangements comprising three-position switching means. 3,720,888, Cl. 333-7.000.

Marathon Oil Company: *See—*
Argabright, Perry A.; Sinkey, Vernon J.; and Phillips, Brian L., 3,720,632.
Norton, Charles J.; and Hurley, Edward, Jr., 3,720,710.

Marie, Maurice; and Trouilhet, Achille, to Calor. Roller bearing device for a washing machine, particularly for a linen washing machine. 3,720,081, Cl. 68-132.000.

Marine Colloids Inc.: *See—*
Guiseley, Kenneth B.; and Whitehouse, Philip A., 3,720,659.

Mark 50 Machinery Sales, Inc.: *See—*
Lawrence, Mark F.; and Beecroft, William C., 3,720,244.

Marsden, Howard A.: *See—*
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., 3,720,221.

Marsh, Paul G., to Black Clawson Company, The. Recovery of salvageable components from solid waste material. 3,720,380, Cl. 241-20.000.

Martel, Marvin L. Oil crankcase service. 3,720,287, Cl. 184-1.500.

Martin, Daryl T., to Hoerner Waldorf Corporation. Book folder. 3,720,366, Cl. 229-37.00e.

Martin, Henry; and Beriger, Ernst, to Ciba Geigy AG. Phosphorus amidates. 3,720,735, Cl. 260-959.000.

Martin Metals Company: *See—*
Danesi, Wilbert P.; and Thielemann, Rudolf H., 3,720,509.

Martin, Patrick Douglas, to Wiggins Teape Research & Development Limited. Drying sheet material. 3,720,002, Cl. 34-18.000.
Martin, Robert L.; Howland, Leland L.; and Eichinger, Le Roy J., to Thermo King Corporation. Transportable refrigeration unit having induction alternator-induction motor reconnection and control system. 3,720,842, Cl. 307-68.000.
Martin, Yvonne Connolly: *See—*
Jones, Peter Hadley; and Martin, Yvonne Connolly, 3,720,768.
Martinsons, Aleksandrs: *See—*
DeWitt, Bernard J.; and Martinsons, Aleksandrs, 3,720,590.
Masaoka, Yutaka, to Yamaha Hatsudoki Kabushiki Kaisha. Driving device for motor driven vehicles. 3,720,277, Cl. 180-5.00r.
Maschinenfabrik Zuckermann Komm. Ges.: *See—*
Schmidt, Erich, 3,720,243.
Mason, Daniel W., to Owens-Illinois, Inc. Capacitor with high dielectric materials. 3,720,862, Cl. 317-258.000.
Massachusetts Institute of Technology: *See—*
Kelley, Paul L.; Fisher, Robert Alan; and Gustafson, T. Kenneth, 3,720,884.
Tannenbaum, Steven R.; Sinskey, Anthony J.; and Maul, Stephen B., 3,720,585.
Massar, Ernst, to Siemens Aktiengesellschaft. Power current cryotron with flat gate conductor. 3,720,847, Cl. 307-265.000.
Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, to Gamon-Camet Industries, Inc. Valve assembly. 3,720,229, Cl. 137-527.800.
Massonne, Joachim; Kreutz, Rolf; and Friedrich, Heinz, to Kali-Chemie Aktiengesellschaft. Method for recovering uranium as uranium hexafluoride. 3,720,748, Cl. 423-4.000.
Masunaga, Kunihiko; Shinohara, Hiroshi; and Kondo, Toshihito. Method of forming a heat resistant film. 3,720,589, Cl. 204-14.00n.
Matheny, Alfred Paul; and Rahon, John R. Emergency air supply system for passengers of a submerged land vehicle. 3,720,207, Cl. 128-142.000.
Matsuda, Kazuo; Tanaka, Yoshiaki; and Sakai, Takeyo, to Kao Soap Co., Ltd. Process for polymerization of tetrahydrofuran. 3,720,719, Cl. 260-615.00b.
Mattel, Inc.: *See—*
Daniels, Charles J.; and La Branche, Harvey W., 3,720,415.
Hart, William, 3,720,117.
May, Richard L., 3,720,011.
Mattel, S.p.A.: *See—*
Ersilio, Levati, 3,720,017.
Matthews, Robert B.; and Fitzmaurice, Charles M., to Plessey Company Limited, The. Fluidic systems. 3,720,217, Cl. 137-805.000.
Matthews, Terence H.; Gold, Charles N.; and Cowpland, Michael C. J., to Microsystems International Limited. Frequency determining network. 3,720,887, Cl. 331-142.000.
Matthey, Johnson, and Mallory, Ltd.: *See—*
Fitzgerald, William M. B., 3,720,805.
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Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Knoche, Wilhelm, 3,720,094.
May, Richard L., to Mattel, Inc. Figure toy stand and phonograph record combination. 3,720,011, Cl. 40-28.200.
Maydan, Dan; Cohen, Melvin Irwin; and Kerwin, Robert Eugene, to Bell Telephone Laboratories, Incorporated. Recording and display method and apparatus. 3,720,784, Cl. 178-6.60r.
Mayer, Warren C., to Johnson & Johnson. Resin bonded dry creped tissue laminate having the crepe removed therefrom and method of making same. 3,720,573, Cl. 161-156.000.
Mc Carty, William J., to General Electric Company. Air conditioner. 3,720,073, Cl. 62-183.000.
Mc Intire, Owen F. Car top carrier for snowmobiles and the like. 3,720,358, Cl. 224-42.080.
Mc Math, Jack A., to Dover Corporation. Safety valve. 3,720,220, Cl. 137-75.000.
McCall, Samuel Leverte, Jr.: *See—*
Eisenberger, Peter M.; and McCall, Samuel Leverte, Jr., 3,720,843.
McCallum, Hugh F., to Dresser Industries, Inc. Earth boring bit thrust bearing. 3,720,274, Cl. 175-372.000.
McCormic, Joseph, to Delta Hydraulics, Inc. Integrated servo actuator. 3,720,118, Cl. 91-47.000.
McCoy, Bernard J.; and Rans, Frank O., to United States of America, Navy. Electromechanical acoustic noise source. 3,720,908, Cl. 340-8.00r.
McCurdy, Neal R.: *See—*
Rochester, James R.; Hamilton, Fenton D.; Navarro, Felipe; and McCurdy, Neal R., 3,720,822.
McDonagh, Stephen M.: *See—*
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McDonald, Hugh C. Hand gun concealing pouch. 3,720,013, Cl. 42-1.00r.
McDonough, William P. Cattle restraining stanchion. 3,720,187, Cl. 119-98.000.
McGinnis, Herbert E., to Goodrich, B. F., Company, The. Belt splice. 3,719,969, Cl. 24-38.000.
McGraw-Edison Company: *See—*
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McGregor, Robert, & Sons Limited: *See—*
Rimmington, Alan, 3,720,439.
McKechnie, John C.; and Grimmer, Paul D., to United States of America, Navy. Visual display simulator. 3,720,007, Cl. 35-12.00n.
McKenry, Robert J.; and Oaks, Seibert S., to Kennametal Inc. Mining tool. 3,720,273, Cl. 175-335.000.
McLaughlin, Charles R.; and West, Jerry B., to Century Geophysical Corporation. High resolution telemetry for random pulse outputs. 3,720,910, Cl. 340-18.00r.
McWilliams, Orcenith D.: *See—*
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Mead, George N. J. Compact steam generator and system. 3,720,188, Cl. 122-41.000.
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Meier, Otto H.: *See—*
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Meinert, Kerwin E.: *See—*
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Meisters, Inara Dagnija, to Pennwalt Corporation. Water soluble lubricant. 3,720,695, Cl. 260-404.800.
Mellgren, Per Gustaf, to Kockum Soderhamn Aktiebolag. Apparatus for felling trees. 3,720,248, Cl. 144-34.00r.
Melotik, Donald J., to Stauffer Chemical Company. Permanganate final rinse for metal coatings. 3,720,547, Cl. 148-6.14r.
Memorex Corporation: *See—*
Andersen, William F., 3,720,931.
Hurtig, Roy Eugene; Geri, Don Winston; and Becker, Paul Horst, 3,720,150.
Mendoza, Gonzalo R. Apparatus to control the cutting depth made in a workpiece by a cutting machine. 3,720,122, Cl. 82-24.00r.
Mennesson, Andre Louis, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Fuel feed devices for internal combustion engines. 3,720,190, Cl. 123-32.0ea.
Menzies, John Ian; and Menzies, Maureen, to Heatshield Research and Development Pty. Ltd. Heat-insulating panel or sheet and a method of and apparatus for making the same. 3,720,558, Cl. 156-199.000.
Menzies, Maureen: *See—*
Menzies, John Ian; and Menzies, Maureen, 3,720,558.
Mercier, Gary M., to Columbia Gas System Service Corporation. Relay timing system. 3,720,858, Cl. 307-141.000.
Merck & Co., Inc.: *See—*
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Peister, Karl; Sletzinger, Meyer; and Hinkley, David F., 3,720,774.
Sprague, James M.; and Ziegler, Carl, 3,720,709.
Merner, Kenneth R.; and Stobbe, Richard E., to Kearney & Trecker Corporation. Feed rate controller. 3,720,135, Cl. 90-14.000.
Metaframe Corporation: *See—*
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Metal Box Company, Limited, The: *See—*
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Rayner, Adrien Patrick; and Howell, Bryan Gordon, 3,720,367.
Metallgesellschaft: *See—*
Kapp, Ernst; and Becker, Paul, 3,720,625.
Metlesics, Werner; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. 6-(hydrocyalkyl) benzhydrols. 3,720,720, Cl. 260-618.00b.
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Metzner, Wolfgang; Fuhr, Karl; Rudolph, Hans; Schnell, Hermann; and Heine, Hans-Georg, to Bayer Aktiengesellschaft. Polyester moulding and coating masses which can be cured by ultraviolet irradiation. 3,720,635, Cl. 260-862.000.
Meyer, Garber: *See—*
Sampson, William Boyd; and Meyer, Garber, 3,720,777.
Meyer, William J.; and Staehlin, John H., to United States of America, Navy. Polarization device for radar antenna. 3,720,947, Cl. 343-756.000.
Meyers, Robert L. Heater and hot water boiler. 3,720,189, Cl. 122-250.00r.
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Michalko, Edward: *See—*
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Michelson, Anatol, to Gulf & Western Industrial Products Company. Method and apparatus for press working. 3,720,127, Cl. 83-550.000.
Microsystems International Limited: *See—*
Matthews, Terence H.; Gold, Charles N.; and Cowpland, Michael C. J., 3,720,887.
Midwestern Industries, Inc.: *See—*
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Mighty-Mac, Inc.: *See—*
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Miles Laboratories, Inc.: *See—*

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Miller, David James: *See—*
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Miller, Robert E., to Monsanto Company. Crosslinked protein with acid anhydride as a ruminant feed material. 3,720,765, Cl. 424-177.000.
Mills, Archie W. Tapping and dispensing device for fluid filled containers. 3,720,356, Cl. 222-569.000.
Milwaukee Cylinder Corporation: *See—*
Landherr, Lawrence R.; and Prohaska, Karl J., 3,720,137.
Mimatu Kako Kabushiki Kaisha: *See—*
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Minden, Edmund Freitag. Differential pressure measuring mechanism. 3,720,108, Cl. 73-398.00r.
Minich, Paul R., Jr.; and Shaver, Donald E., to C&M Manufacturing Company, Inc. Vehicular mounted wash apparatus. 3,720,226, Cl. 137-334.000.
Minnesota Mining and Manufacturing Company: *See—*
Fridinger, Tomas L.; and Mutsch, Edward L., 3,720,772.
Roche, John L., 3,720,005.
Sevenich, Robert J., 3,720,732.
Miraldi, Floro D. Scintillation crystal structure comprising a series of rectangular wafers forming a bar. 3,720,831, Cl. 250-71.50r.
Mita Industrial Company Limited: *See—*
Inoue, Eiichi; Ueda, Yasuo; and Aizawa, Tatsuo, 3,720,619.
Mitsche, Roy T.: *See—*
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Mitsche, Roy T.; and Michalko, Edward, to Universal Oil Products Company. Transalkylation of alkylaromatic hydrocarbons in contact with a zeolite catalyst composition. 3,720,726, Cl. 260-672.00t.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Molby, Lloyd A., to Le Tourneau, R. G., Inc. Hydraulic systems. 3,720,332, Cl. 214-140.000.
Moldenhauer, Charles L. Motorcycle chain oiler. 3,720,289, Cl. 184-15.00a.
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Harrison, Edmund, Jr., 3,720,311.
Molins, Desmond Walter, to Molins Organization Limited, The. Method of testing cigarette paper. 3,720,095, Cl. 73-38.000.
Molins Organization Limited, The: *See—*
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Moll, Oswin C.,: *See—*
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Moll, Oswin C., to Moll, Oswin C.,, King, Leonard H. and Campani, John. Fire retardant grounding means for junction boxes. 3,720,783, Cl. 174-51.000.
Monpetit, Louis A. Method and apparatus for coding and reading data governing the duration of energization of fuel injection in an internal combustion engine. 3,720,193, Cl. 123-32.0ea.
Monsanto Company: *See—*
Clark, Frank S., 3,720,614.
Cunningham, Robert E.; Privott, Wilbur J., Jr.; and Rakestraw, Lawrence F., 3,720,741.
Khetani, Bhupendra N., 3,720,339.
Latinen, George A., 3,720,479.
Lee, Yoon Chai; and Trementozzi, Quirino A., 3,720,340.
Miller, Robert E., 3,720,765.
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Montgomery, Andrew P.; deceased (by Montgomery, Ann P., executrix), to Philco-Ford Corporation. Touch-button actuated electronic latching device with means for ensuring latch operation upon the application of power. 3,720,876, Cl. 325-464.000.
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Moore Business Forms, Inc.: *See—*
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Moore, Samuel, & Company: *See—*
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Moorer, Henry D.; and Stokeld, Richard W., Jr., to Texaco Inc. Alkylation process employing flash vaporization of excess olefin from an olefin absorption step. 3,720,731, Cl. 260-683.620.
Morane, Bruno P.; and Alexandre, Pierre E., to L'Oreal. Method of attaching innermost of two containers to a dispensing valve carried by the outermost container. 3,720,376, Cl. 239-308.000.
Morat, Franz, G.m.b.H.: *See—*
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Moret, Michel: *See—*
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Morgan, Martin J.; Evans, William C.; Rappaport, Richard A.; and Gutzmer, Alfred N., to Sybron Corporation. Amplifier systems and modulation. 3,720,873, Cl. 324-158.00t.
Morner, Bengt O.J.S. Fishing reel with clutch. 3,720,386, Cl. 242-217.000.
Morris, Errick G., to Eaton Yale & Towne, Inc. Vehicle control mechanism. 3,720,423, Cl. 280-87.00a.
Morris, Louis: *See—*
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Motorola, Inc.: *See—*
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Schmidt, Bernard H., Jr., 3,720,848.
Motta, Salvatore, to Avco Corporation. Means for forming and securing turbine compressor blades. 3,720,481, Cl. 416-220.000.
Mourgue, Roger, to Modern Tube Societe Anonyme. Seats. 3,720,443, Cl. 297-383.000.
Mowid Anstalt: *See—*
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MTD Products, Inc.: *See—*
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Mueller, James P.: *See—*
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Mulle, Theodore, Jr.: *See—*
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Muller, Fritz; Werner, Hugo; Werner, Bruhl; and Thummler, Ursus, to Knapsack Aktiengesellschaft. Process for separating ferrophosphorus and phosphorus furnace slag from one another in a casting bed. 3,720,506, Cl. 75-24.000.
Muller, Horst: *See—*
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Muller, Thomas Emery: *See—*
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Munk, Edmund E. Method for producing compression-molded articles. 3,720,738, Cl. 264-37.000.
Munroe, Thomas. Molded pallet. 3,720,176, Cl. 108-58.000.
Murakami, Noboru: *See—*
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Muraoka, Tateki: *See—*
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Murphy, Bob G.; and Scott, J. O., to Cities Service Oil Company. Gas well stimulation. 3,720,263, Cl. 166-303.000.
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Murphy, Joseph P., to Avco corporation. Dynamic blade particle separator. 3,720,045, Cl. 55-306.000.
Murray Curvex Printing Limited: *See—*
James, David Richard, 3,720,162.
Murray, Glen W.; and Coy, Donald C. Rotating and tilting double bed trailer. 3,720,336, Cl. 214-505.000.
Muta, Akinori; Hayakawa, Yukio; and Manaka, Makoto, to Kabushiki Kaisha Kitachi Seisakusho and Hitachi Kasei Kogyo Kabushiki Kaisha. Low pressure sintering of boron nitride using low thermal expansion static centering molds. 3,720,740, Cl. 264-65.000.
Mutsch, Edward L.: *See—*
Fridinger, Tomas L.; and Mutsch, Edward L., 3,720,772.
Myers, Philip. Theft-prevention ignition system. 3,720,284, Cl. 180-114.000.
Nablo, Sam V., to Energy Sciences, Inc. Apparatus for and method of controlling relativistic charged particle beam distribution and transport. 3,720,828, Cl. 250-49.50r.
Naden, Robert W.: *See—*
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Nagoshi, Kazuo: *See—*
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Naito, Yoshiyuki, to TDK Electronics Company, Limited. Microwave absorbing wall element. 3,720,951, Cl. 343-18.00a.
Nakagami, Shizuo. Dressing container assembly. 3,720,522, Cl. 99-171.0cp.
Nakagami, Shizuo. Dressing container assembly. 3,720,523, Cl. 99-171.0cp.
Nakagami, Shizuo. Container assembly with frangible mixing means. 3,720,524, Cl. 99-171.00b.
Nakai, Yasuto: *See—*
Yagi, Yoshiharu; Hino, Minoru; Noguchi, Takanobu; Wada, Motomu; Yasuno, Kiyoshi; Sota, Kou; Ito, Nobuo; and Nakai, Yasuto, 3,720,652.
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Nakamoto, Hisashi: *See—*
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Nakanishi, Michio; Arimura, Katsuo; and Tsuda, Yoshiaki, to Yoshitomi Pharmaceutical Industries, Ltd. Benzodioxane derivatives. 3,720,670, Cl. 260-244.00r.
Nakata, Toshihiro, to Platinum Pen Co., Ltd. Ink carteidge for a writing implement. 3,720,473, Cl. 401-40.000.
Nan Jo, Yoshimasa: *See—*
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Narayanan, Venkatachala; and Haugwitz, Rudiger D., to Squibb, E. R., & Sons, Inc. Mercaptobenzimidazole derivatives. 3,720,686, Cl. 260-309.200.
Nasser, Gamal El Din; and Waldmann, Hans, to Linde Aktiengesellschaft. Heat exchanger. 3,720,071, Cl. 62-42.000.
National Cash Register Company, The: *See—*
Cartmell, James V.; and Churchill, Donald, 3,720,623.
National Distillers and Chemical Corporation: *See—*
Feldman, Julian; and Thomas, Martin, 3,720,679.
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Tessler, Martin M., 3,720,663.
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Navarro, Felipe: *See—*
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Nelson, Arthur W. Mini-dolly for transporting vehicles. 3,720,422, Cl. 280-35.000.
Nelson, John Archiblad; and Zaunius, Giedre Maria, to Ciba Corporation. Partial reduction of phthalonitriles. 3,720,702, Cl. 260-465.00d.
Neukom, Chester G.: *See—*
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Newton, Cecil J. V.; and Harrison, Ernest W., to Esso Research and Engineering Co. Direct digital computer control error detector system. 3,720,819, Cl. 235-153.0ae.
Nicholl, Edward McKillop. Manufacture of methylamines. 3,720,715, Cl. 260-583.00j.
Nickerson, Ralph F., to Monsanto Company. Polyvinyl alcohol adhesive composition with high wet tack containing a boron compound and a cis 1, 2 polyol compound. 3,720,633, Cl. 260-17.4st.
Nicol, John: *See—*
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Nicol, Ronald, to Heinemann Electric Company. Circuit breaker with improved auxiliary switch actuator. 3,720,891, Cl. 335-13.000.
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Nielsen, Peter A.: *See—*
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Isobe, Takehiro; Shimazu, Toshio; Ogawa, Koji; Arake, Yukio; Wakamatsu, Aizu; and Hashimoto, Tatsuji, 3,720,510.
Nistri, Ugo; Vargiu, Silvio; Giovanni, Sfsto San; and Pitzalis, Mario, to Societa Italiana Resines S.p.A. Method of obtaining gel-free epoxy resins by filtration in the molten state. 3,720,645, Cl. 260-47.0ep.
Nitzsche, Siegfried: *See—*
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Nommensen, Johan P., to Stamicarbon N.V. Process and device for the preparation of a plastic fibre fleece. 3,720,361, Cl. 226-7.000.
Norback, Hakan, to KemaNord AB. Di-cetyl peroxy dicarbonate. 3,720,700, Cl. 260-463.000.
Nordin, Robert W., to Teletype Corporation. Constant torque clutches. 3,720,076, Cl. 64-27.0nm.
Norick, William B.: *See—*
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Raves, John Reginald, 3,720,070.
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Novar Corporation: *See—*
Bennett, William C., 3,720,363.
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Office de Radiodiffusion-Television Francaise: *See—*
Remy, Maurice A.; and Tartary, Daniel M., 3,720,780.
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Ogg, Robert D., to Eastern Company, The. Water sealed boat speedometer. 3,720,102, Cl. 73-186.000.
Ohara, Osamu: *See—*
Imoto, Saburo; Ohara, Osamu; Nakamoto, Hisashi; Tanaka, Hisashi; and Ueeda, Ryuhei, 3,720,651.
Ohmori, Kaoru; Nakajima, Mituo; Ishida, Shuichi; and Asaka, Shiroh, to Nippon Kiyaku Kabushiki Kaisha. Fungicidal compositions comprising copper 8-oxyquinolate and copper α-amino α-ethyl-thiobutyrate. 3,720,767, Cl. 424-245.000.
Ohno, Eiji, to Kabushiki Kaisha Komatsu Seisakusho. Inching and two speed planetary gear drives for presses. 3,720,296, Cl. 192-3.520.
Okamoto, Toshio: *See—*
Fujisaki, Yoshisato; Fukuma, Noboru; Chayamiti, Hiroshi; Okamoto, Toshio; Seizaburo, Shigeta; and Kitago, Takanobu, 3,720,576.
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Okay, Edward J.: *See—*
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Olechowski, Jerome Robert, to Cities Service Company. Molecular sizing process for preparing low molecular isobutylene-conjugated polyene copolymers. 3,720,654, Cl. 260-85.30r.
Olechowski, Jerome Robert, to Cities Service Company. Alkylation process. 3,720,725, Cl. 260-671.00c.
Oleson, George E.; and Woods, Roger M. Black chromium plating process. 3,720,588, Cl. 204-51.000.
Olin Corporation: *See—*
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Hubbard, Charles L., 3,720,171.
Oliver, Norman J.; Hardie, Virgil; and Camp, Ludwig, to Sioux Steel Company. Latch for farm gates. 3,720,431, Cl. 292-264.000.
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Long, Jasper J.; and Justus, Ben, 3,719,990.

Organon Inc.: *See—*
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O'Rourke, William J. Dispensing apparatus. 3,720,186, Cl. 119-51.120.

Osawa, Kiyoshi, to Mimatu Kako Kabushiki Kaisha. Process for the extraction of hexadecenoic acid. 3,720,696, Cl. 260-419.000.

Ostbergs Fabriks AB: *See—*
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Overhoff, Dietrich, to Sigri Elektrographit GmbH. Process for the production of carbon and graphite fibers. 3,720,759, Cl. 423-447.000.

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Owens-Illinois, Inc.: *See—*
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Mason, Daniel W., 3,720,862.

Pacini, August J., to Purex Corporation Ltd. Method and composition for the topical treatment of herpetic keratitis. 3,720,773, Cl. 424-295.000.

Painter, Marvin R.: *See—*
Ballas, Max; and Painter, Marvin R., 3,720,253.

Palmberg, Paul W., to Physical Electronics Industries, Inc. Sample fracturing apparatus. 3,720,829, Cl. 250-49.50b.

Pare, Robert Lee. Elastomer seal for modular roadbeds. 3,720,142, Cl. 404-67.000.

Paret, Giancarlo; and Cinelli, Ermanno, to Snam Progetti S.p.A. Process for the extraction of aromatic hydrocarbons by keto and aldo-morpholines. 3,720,605, Cl. 208-321.000.

Parish, Hubert Gene; and Einstein, Bernard Ceasar, to Litton Systems, Inc. Process for applying a non-self-supporting metal layer atop a plate surface. 3,720,535, Cl. 117-46.0ca.

Park-Ohio Industries, Inc.: *See—*
Lewis, John C., 3,720,803.

Parker Hannifin Corporation: *See—*
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Parker-Hannifin Corporation: *See—*
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Pasquale, Michael J. Guiding and supporting means for a beater. 3,720,270, Cl. 173-163.000.

Patrick, William A., to Polyvend, Inc. Vending machine. 3,720,350, Cl. 221-14.000.

Paulsen, Robert H.: *See—*
Eichen, Howard R.; and Paulsen, Robert H., 3,720,948.

Pauly, Bruce H.; Nicol, John; and Chen, Karl K., to Weatherhead Company, The. Split collet crimper. 3,720,088, Cl. 72-402.000.

Pawlitzki, Rainer: *See—*
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Payne, Delmar V.: *See—*
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Chow, Henry; Faris, William R.; Lynn, Howard F.; and Payne, Delmar V., 3,720,946.

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Payraudeau, Hubert Michel Henri Auguste; and Payraudeau, Henri Andre Charles Joseph, to Technab. Process and installation for constructing buildings particularly dwellings. 3,720,326, Cl. 214-1.00h.

Pearce, Woodrow W. Combination pet feeder for flowable solid material and liquid. 3,720,184, Cl. 119-51.500.

Peister, Karl; Sletzinger, Meyer; and Hinkley, David F., to Merck & Co., Inc. Method of treating pain, fever or inflammation. 3,720,774, Cl. 424-303.000.

Peltonen, Ahti, to Eaton Yale & Towne Canada Limited. Tree harvesting shear. 3,720,249, Cl. 144-309.0ac.

Pelzel, Erich, to Stolberger Zink AG. Method of making malleable zinc-alloy bodies. 3,720,550, Cl. 148-11.50r.

Pennwalt Corporation: *See—*
Meisters, Inara Dagnija, 3,720,695.

Peripheral Sciences, Inc.: *See—*
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Perkins, Robert L.; and Keel, Beat G., to Control Data Corporation. Magnetic recording arrangement utilizing a gas film bearing. 3,720,932, Cl. 340-174.10e.

Perl, Sidney. Vehicle indicator belt. 3,720,918, Cl. 340-81.00r.

Permut, Albert A.; and Permut, Ronald M. Boat and equipment loading systems. 3,720,334, Cl. 214-450.000.

Permut, Ronald M.: *See—*
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Perreault, Aime Joseph: *See—*
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Perry, Anthony James: *See—*
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Peters, Karl-Heinz; and Neeff, Rutger, to Bayer Aktiengesellschaft. Anthraquinone dyestuffs. 3,720,693, Cl. 260-377.000.

Peterson, Harry L.; and Fellows, Alfred L. Lighted disk-type flight toy and components thereof. 3,720,018, Cl. 46-228.000.

Petrolite Corporation: *See—*
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Redmore, Derek, 3,720,498.

Pfizer Inc.: *See—*
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Philco-Ford Corporation: *See—*
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Phillippi, John F., to Aerodyne Development Corporation. Classifier for fine solids. 3,720,314, Cl. 209-144.000.

Phillips, Brian L.: *See—*
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Phillips Petroleum Company: *See—*
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Pioneer Electronic Corporation: *See—*
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Pioneer Laboratories, Inc.: *See—*
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Pirson, Ewald: *See—*
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Pittman, Allen G.; and Wasley, William L., to United States of America, Agriculture. Polymers of fluorinated epoxides and use thereof. 3,720,630, Cl. 260-2.00a.

Pitzalis, Mario: *See—*
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Plamper, Gunter F., to MTD Products, Inc. Pawl and ratchet mechanism. 3,720,294, Cl. 192-46.000.

Platinum Pen Co., Ltd.: *See—*
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Plempel, Mandred: *See—*
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Plessey Company Limited, The: *See—*
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Plessey Handel Und Investments A. G.: *See—*
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Plessey Telecommunications Research Limited: *See—*
Clark, Adrian Percy, 3,720,789.

Plowman, James S.; and Walsh, Thomas C., to United Aircraft Corporation. Rotor construction. 3,720,480, Cl. 416-220.000.

Podolan, Edward G., to General Motors Corporation. Vehicle body retractable top. 3,720,440, Cl. 296-137.00b.

Pohl, Gerhard; Rink, Karl-Heinz; Triebel, Wolfgang; Weiberg, Otto; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for stabilizing lactones. 3,720,689, Cl. 260-343.000.

Pohnisch, Hannelore: *See—*
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Polanek, Edward L.; and Micek, Daniel W., to Universal Research Laboratories, Incorporated. Audio modulated switching circuit having flashing lights. 3,720,939, Cl. 340-366.00r.

Polaroid Corporation: *See—*
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Johnson, Bruce K.; and Shelton, William A., 3,720,145.

Politz, William E., to Young, Stephen A. Drain shoe plug. 3,719,961, Cl. 4-295.000.

Pollitzer, Ernest L., to Universal Oil Products Company. Jet fuel paraffin production. 3,720,728, Cl. 260-676.00r.

Polyvend, Inc.: *See—*
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Portinari, Antonio: *See—*
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Pot, Jacob Peter, to Bull General Electric (Nederland) N.V. Apparatus for reading record cards. 3,720,809, Cl. 235-61.11e.

Potts, Harold L., to Garrett Corporation, The. Cable drum gear apparatus. 3,720,400, Cl. 254-172.000.

PPG Industries, Inc.: *See—*
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Presto Lock Company: *See—*
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Price, Warren H.: *See—*
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Pritchett, Ervin G., to National Distillers and Chemical Corporation. Process for preparing unsaturated chlorohydrocarbons and saturated polychlorohydrocarbons by oxychlorination of hydrocarbons and catalyst system. 3,720,723, Cl. 260-658.00r.

Privott, Wilbur J., Jr.: *See—*

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Pro-Tech, Inc.: *See—*
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Process forducingthslfricacid content: *See—*
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Production Technology Inc., mesne: *See—*
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Producto Machine Company, The: *See—*
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Prohaska, Karl J.: *See—*
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Prudential Lighting Corporation: *See—*
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Pruett, George R., to United States of America, Army, mesne. Scanning infrared radiation sensor. 3,720,835, Cl. 250-83.3hp.

Pryor, Michael J.: *See—*
Brock, Andrew J.; and Pryor, Michael J., 3,720,508.

Pullman Incorporated: *See—*
Sitko, Leopold S., 3,720,325.

Puna, Erich, to Brundell och Jonsson AB. Tree harvesting vehicle. 3,720,245, Cl. 144-3.00d.

Punako, Stephen; and Swanson, George J., to Bendix Corporation, The. Electrical connector with extended cable support. 3,720,906, Cl. 339-101.000.

Purex Corporation Ltd.: *See—*
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Putman, Richard E. J.: *See—*
Carlson, Norman R.; Putman, Richard E. J.; and Carleton, James T., 3,720,404.

Quick, Graeme R., to Iowa University Research Foundation, Inc. Ground cover fruit harvesting machine. 3,720,051, Cl. 56-330.000.

Quick, James E.; and Venezky, David L., to United States of America, Navy. Process for the synthesis of dihydrocarbonphosphinates. 3,720,736, Cl. 260-973.000.

Rachel, Todd L., to Bendix Corporation, The. Acceleration enrichment circuitry for electronic fuel system. 3,720,191, Cl. 123-32.0ea.

Radoi, Aurel C.: *See—*
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Raeburn, George Dand: *See—*
Taterzynski, Sylvester R.; and Raeburn, George Dand, 3,720,560.

Rahon, John R.: *See—*
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Rajon, Andre: *See—*
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Rakestraw, Lawrence F.: *See—*
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Ramirez, Carlos M., to Steven Manufacturing Company. Article transporting game apparatus. 3,720,412, Cl. 273-86.00r.

Ramoska, John: *See—*
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Ramsey, Maynard, III, to Ramtech, Inc. Disposable body fluid pressure monitor. 3,720,201, Cl. 128-2.05d.

Ramtech, Inc.: *See—*
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Randell, Donild Richard; and Cox, Ernest Alfred, to Ciba-Geigy Corporation. Hydroxybenzotriazoles as metal deactivators. 3,720,616, Cl. 252-51.50r.

Rank Organisation Limited, The: *See—*
Anderson, John Gordon, 3,720,890.
Spragg, Robert Claude; and Whitehouse, David John, 3,720,818.

Rank Organization Limited, The: *See—*
Russell, Kenneth F.; Baildon, Shipley; and Collinson, John D., 3,720,285.

Rans, Frank O.: *See—*
McCoy, Bernard J.; and Rans, Frank O., 3,720,908.

Raper, Dick. Self contained fluid pump device. 3,720,489, Cl. 418-45.000.

Raphaelian, Leo A.: *See—*
Taber, David; and Raphaelian, Leo A., 3,720,620.

Rappaport, Richard A.: *See—*
Morgan, Martin J.; Evans, William C.; Rappaport, Richard A.; and Gutzmer, Alfred N., 3,720,873.

Rasquin, John R.: *See—*
Aldrich, Billy R.; Cooper, Charles R.; and Rasquin, John R., 3,720,208.

Rathbun, William H., to General Electric Company. Fail safe vacuum type circuit interrupter and associated load current tap changer for electric induction apparatus. 3,720,867, Cl. 323-43.50r.

Raupp, Gunther; and Voltz, Jacques. Polycyclic dyestuffs. 3,720,671, Cl. 260-249.500.

Rausch, Richard E.: *See—*
Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., 3,720,628.

Raves, John Reginald, to Northern Electric Company Limited. Apparatus and method for plowing cable or pipe. 3,720,070, Cl. 61-72.600.

Rayner, Adrien Patrick; and Howell, Bryan Gordon, to Metal Box Company Limited, The. Containers. 3,720,367, Cl. 229-62.000.

RCA Corporation: *See—*
Feldstein, Nathan; and Weiner, Joel Ana, 3,720,525.
Kosonocky, Walter Frank, 3,720,922.
Ross, Edward Charles, 3,720,925.
Steitz, Richard Ralph, 3,719,981.

Ready, Arthur William. Game target. 3,720,413, Cl. 273-182.00r.

Redactron Corporation: *See—*
Wolf, Edgar, 3,720,927.

Redment Engineering Company Limited: *See—*
Lambert, John Robert, 3,720,437.

Redmore, Derek, to Petrolite Corporation. Inhibiting corrosion with nitrogen-heterocyclic phosphonic acid. 3,720,498, Cl. 21-2.500.

Reed, Robert D.: *See—*
Zink, John Smith; Goodnight, Hershel; and Reed, Robert D., 3,720,495.

Reeves, John R.; Dow, Bruce R.; and Thompson, Francis T., to Westinghouse Electric Corporation. Limit switch with high hysteresis. 3,720,845, Cl. 307-116.000.

Regel, Erich: *See—*
Buchel, Karl Heinz; Regel, Erich; and Plempel, Mandred, 3,720,770.

Regie Nationale des Usines Renault: *See—*
Ventre, Pierre; and Ferraris, Robert, 3,720,084.

Rehmet, Hans; Dienst, Manfred; and Muller, Horst, to Berstorff, Hermann, Maschinenbau GmbH. Centreless winding of a roll of foil. 3,720,381, Cl. 242-56.00r.

Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
Guldenpfennig, Rolf, 3,720,648.

Reilly, Sherman, Inc.: *See—*
Bozeman, Hoyt W., Jr., 3,720,399.

Reinecke, Marvin E., to Phillips Petroleum Company. Chromatographic apparatus for analyzing a rich oil sample. 3,720,092, Cl. 73-23.100.

Reinsch, Edward: *See—*
Jelinek, Jerry G.; and Reinsch, Edward, 3,720,420.

Reinsch, Herbert; and Korner, Peter, to Bosch, Robert, Photokino GmbH. Motion picture projector. 3,720,461, Cl. 352-224.000.

Reisner, Sam, to Kar Products, Inc., mesne. Hand operated key cutter. 3,719,992, Cl. 30-131.000.

Reithmeyer, Randolph A., Jr., to United States of America, Army. Low-capacity, high impedance circuit. 3,720,879, Cl. 330-26.000.

Remco Industries, Inc.: *See—*
Waznys, Peter J.; and Bart, Philip D., 3,720,019.

Remington Arms Company, Inc.: *See—*
Black, Richard I.; and Yacko, Edward M., 3,720,823.

Remy, Maurice A.; and Tartary, Daniel M., to Office de Radiodiffusion-Television Francaise. PCM digital color television system. 3,720,780, Cl. 178-5.20r.

Research Corporation: *See—*
Coughlin, Robert W.; and Siegel, Richard D., 3,720,321.
Tang, Henry; and Harper, William, Jr., 3,720,882.

Resta, Alberto, to Telettra-Laboratori di Telefonia Elettronia e Radio S.p.A. Electronic crosspoint network with semiconductor switching. 3,720,792, Cl. 179-18.0gf.

Reynolds Metals Company: *See—*
Bryan, George D., Jr.; and Constantino, Nicholas, 3,720,038.

Rheinmetall G.m.b.H.: *See—*
Wiemers, Karl-Josef, 3,720,132.

Richards, Gary E., to General Motors Corporation. Piloted selector assembly. 3,720,371, Cl. 237-2.00a.

Richardson-Merrell, Inc.: *See—*
Albrecht, William L.; Fleming, Robert W.; and Horgan, Stephen W., 3,720,680.

Richco Plastic Company: *See—*
Lodi, Frank, 3,719,971.

Richter, Juergen H., to United States of America, Navy. Variable resolution radar for tropospheric sounders. 3,720,949, Cl. 343-14.000.

Richter, Sidney B.: *See—*
Krenzer, John; and Richter, Sidney B., 3,720,684.

Riedel, Rudolph T. Flush tank control. 3,719,957, Cl. 4-67.000.

Riedner, William E.: *See—*
Snyder, James H.; and Riedner, William E., 3,720,327.

Riesbeck, Laverne J.; and Blackwell, Willis A., to Midwestern Industries, Inc. Flow controller for a material separator. 3,720,316, Cl. 209-254.000.

Rigney, David V., to United Aircraft Corporation. Process of coating an alloy substrate with an alloy. 3,720,537, Cl. 117-50.000.

Riley, James R.: *See—*
Bryant, John C.; Turner, James Keith; Riley, James R.; and Aurich, Christoph W., 3,720,241.

Riley, Kenneth L.; and Shoemaker, John D., Jr., to Esso Research and Engineering Company. Water injection in a hydrodesulfurization process. 3,720,602, Cl. 208-216.000.

Riley, Michael A.: *See—*
Frohock, Millard M., Jr.; Riley, Michael A.; and French, William E., 3,720,131.

Rimmington, Alan, to McGregor, Robert, & Sons Limited. Concrete paving machines. 3,720,439, Cl. 296-28.000.

Ringfeder Gm.b.H.: *See—*
Friedrichs, Josef; Schropfer, Karl Heinrich; and Kloren, Ulrich, 3,720,429.

Ringland, William L.; Neumann, Manfred E.; Kaeser, Ernst K.; and Geiersbach, Allois F., to Allis-Chalmers Corporation. Electrically driven vehicle steered by control of power and speed of tractive elements. 3,720,863, Cl. 318-52.000.

Rink, Karl-Heinz: *See—*
Pohl, Gerhard; Rink, Karl-Heinz; Triebel, Wolfgang; Weiberg, Otto; and Weigert, Wolfgang, 3,720,689.

Rinkler, Heinrich; Wieden, Horst; Engelhard, Helmut; and Nogaj, Alfred, to Farbenfabriken Bayer Aktiengesellschaft. Polyacrylonitrile polymer mixtures with an affinity for acid dyes containing a cyclic imide polymer. 3,720,733, Cl. 260-895.000.

Rishton, Michael L.; and Federico, Armando, to Avco Corporation. Safety connector for balloon pump. 3,720,199, Cl. 128-1.00d.

Robbins, Frederick E.: *See—*
Fagerstrom, Joseph W.; and Robbins, Frederick E., 3,719,989.

Robertson, H. H., Company: *See—*
Curran, Bernard E., 3,720,029.

Robinson, John E.: *See—*
Drummond, Michael E.; and Robinson, John E., 3,720,354.

Robson, Harry E., to Esso Research and Engineering Company. Method for preparing a small-pore synthetic zeolite. 3,720,753, Cl. 423-329.000.

Roche, John L., to Minnesota Mining and Manufacturing Company. Audio-visual system. 3,720,005, Cl. 35-8.00a.

Rochester, James R.; Hamilton, Fenton D.; Navarro, Felipe; and McCurdy, Neal R., to Kenotech, Inc. Xenon photography light. 3,720,822, Cl. 240-1.300.

Rocker, Herman, to Windmoller & Holscher. Apparatus for forming parcels of parallelipiped shape from individual stacks of flattened paper. 3,720,040, Cl. 53-62.000.

Roder, Kurt: *See—*
Hoyer, Georg-Alexander; and Roder, Kurt, 3,720,769.

Romhanyi, Andras: *See—*
Garay, Lajos; Urban, Gabor; Romhanyi, Andras; and Sisa, Laszlo, 3,720,028.

Ronzio, Nelson J.: *See—*
Taylor, Melvin L.; and Ronzio, Nelson J., 3,720,749.

Ropke, Horst: *See—*
Junghans, Klaus; and Ropke, Horst, 3,720,694.

Rosback, Donald H., to Universal Oil Products Company. Adsorbing olefins with a copper-exchanged type zeolite. 3,720,604, Cl. 208-310.000.

Rosen, Karl Isac. Yarn control device. 3,720,384, Cl. 242-47.010.

Rosenberry, Raymond A. Transmission line impedance matching circuit. 3,720,878, Cl. 330-12.000.

Rosenholm, Robert: *See—*
Gunn, Kenneth C.; McDonagh, Stephen M.; and Rosenholm, Robert, 3,720,797.

Rosfelder, Andre M., to United States of America, Navy. Manipulator apparatus for gripping submerged objects. 3,720,433, Cl. 294-64.00r.

Ross, Edward Charles, to RCA Corporation. Memory system using variable threshold transistors. 3,720,925, Cl. 340-173.00r.

Ross, Warren N. Irrigation line move. 3,720,374, Cl. 239-177.000.

Roth, Michael: *See—*
Bergmeister, Eduard; Kirst, Paul-Gerhard; Nitzsche, Siegfried; Pirson, Ewald; and Roth, Michael, 3,720,538.

Roussel-UCLAF: *See—*
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,720,713.

Rowland, David L. Seating and sub-assembly for seats and backs. 3,720,568, Cl. 161-48.000.

Rowlette, John J., to Hughes Aircraft Company. Battery cell structure and method of determining state of charge. 3,720,869, Cl. 324-29.500.

Roymoulik, Sunanda K., to International Paper Company. Chlorine dioxide-peracetic acid-chlorine dioxide pulp bleaching sequence. 3,720,577, Cl. 162-67.000.

Rozinska, Ralph L. Blueberry picker. 3,720,050, Cl. 56-330.000.

Rudolph, Hans: *See—*
Metzner, Wolfgang; Fuhr, Karl; Rudolph, Hans; Schnell, Hermann; and Heine, Hans-Georg, 3,720,635.

Rusin, Dominic J. Deburring tool. 3,720,477, Cl. 408-226.000.

Russell, John J., Jr.: *See—*
Chatterji, Arun K.; Custozzo, Marianne; Kiriazides, Demosthenes K.; Russell, John J., Jr.; and Serio, John P., 3,720,617.

Russell, Kenneth F.; Baildon, Shipley; and Collinson, John D., to Rank Organization Limited, The. Loudspeakers. 3,720,285, Cl. 181-31.00b.

Russell, Lionel E. Bathtub having improved safety for infirm or handicapped. 3,719,960, Cl. 4-173.000.

Russell, Taft Birch; and Gracie, John, to Taft Electrosystems, Inc. Power transmission fault indicator with automatic reset means. 3,720,872, Cl. 324-133.000.

Russell-French, Harry M., to Budd Company, The. Resiliently mounted railway vehicle truck. 3,720,175, Cl. 105-224.100.

Rutenberg, Morton W.: *See—*
Tessler, Martin M.; and Rutenberg, Morton W., 3,720,662.

Ruti Machinery Works Ltd.: *See—*
Keldany, Rachid, 3,720,237.
Strauss, Edgar, 3,720,238.

Ruti Machinery Works Ltd.; formerly Caspar Honegger, Ruti ZH: *See—*
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Rutter, Peter William, to Ilford Limited. Packages for sheet material. 3,720,035, Cl. 53-3.000.

Ruus, Henn: *See—*
Macaulay, Norman; and Ruus, Henn, 3,720,534.

Ruzmus, Walter J., to Kelsey-Hayes Company. Adjustable gate for butt welding machine. 3,720,239, Cl. 140-2.000.

Ryer, Chester M.: *See—*
Hagie, Laird T.; and Ryer, Chester M., 3,720,739.

Rysti, Alpo. Timber conveyor. 3,720,300, Cl. 198-20.00r.

Sachetto, Jean Pierre: *See—*
Arendt, John Harold; Sachetto, Jean Pierre; and Carriere, Jean-Paul, 3,720,660.

Sage, Ira H.: *See—*
Funk, Wilmer E.; and Sage, Ira H., 3,719,983.

Sahlin, John Carl Erik. Projection screen. 3,720,455, Cl. 350-117.000.

Sahs, Leonard J., to Amana Refrigeration, Inc. Control circuit for trash compactor. 3,720,844, Cl. 307-112.000.

Saiguji, Shigeru: *See—*
Soda, Shigenari; Seki, Tatsujiro; Saiguji, Shigeru; and Hayashi, Motoshige, 3,720,572.

Saito, Yuichi: *See—*
Yamaguchi, Tetsuro; Saito, Yuichi; Nishino, Yoshio; and Inoue, Shunichi, 3,720,512.

Sakai, Shoushiro: *See—*
Suzuki, Shigeyuki; Kumamoto, Kotaro; Kaneda, Isamu; and Sakai, Shoushiro, 3,720,624.

Sakai, Takeyo: *See—*
Matsuda, Kazuo; Tanaka, Yoshiaki; and Sakai, Takeyo, 3,720,719.

Sakakibara, Naoji: *See—*
Asano, Tadao; Murakami, Noboru; Akashi, Toru; and Sakakibara, Naoji, 3,720,425.

Sakomura, Toshio; Kisaki, Hisashi; Tada, Takashi; and Mabuchi, Shunsuke, to Toyo Soda Manufacturing Co., Ltd. Process for preparing 1,4-diacetoxy-2-butene from dichlorobutenes. 3,720,704, Cl. 260-491.000.

Sakuraba, Hirosi, to International Mechanical Vibration Laboratory, Inc. Method and apparatus for detecting angular position and amount of dynamic unbalance of rotating body. 3,720,110, Cl. 73-360.000.

Sampson, William Boyd; and Meyer, Garber, to United States of America, Atomic Energy Commission. Low loss conductor for A.C. or D.C. power transmission. 3,720,777, Cl. 174-15.00c.

Sanders Associates, Inc.: *See—*
Hayner, Paul F.; and Eldridge, David G., 3,720,483.

Sanders, Mathias: *See—*
Eidinger, Adolf; Sanders, Mathias; and Schnieder, Jost, 3,720,799.

Sankyo Company Limited: *See—*
Tanaka, Tokuji; and Hayashi, Hideaki, 3,720,521.

Santangelo, Joseph Germano, to Celanese Corporation. Process for treating elastomeric fibers. 3,720,744, Cl. 264-205.000.

Sasse, Klaus: *See—*
Widdig, Arno; Kuhle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, 3,720,682.

Sauer, Leo Peter; and Huson, Gale, to Signode Corporation. Bale strapping apparatus. 3,720,158, Cl. 100-4.000.

Sauvageau, Marc. Apparatus for drafting an exact axonometric projection directly from a multiview orthographic projection. 3,719,995, Cl. 33-77.000.

Sawyer, Bruce A. Drive or indicating system employing fluid controls. 3,720,056, Cl. 60-1.000.

Saxon Industries, Inc.: *See—*
Van Auken, John A., 3,720,785.

Say, Donald L., to GTE Sylvania Incorporated. Two color, shadow mask-type cathode ray tube. 3,720,854, Cl. 313-92.00b.

Saytar, Andrew. Ball hockey stick with curvilinear striking faces. 3,720,410, Cl. 273-67.00a.

Scanlon, James D.: *See—*
Garland, Newton C.; Scanlon, James D.; Meier, Otto H.; Tassie, Douglas P.; Clark, Burton P.; and Backus, Lester F., 3,720,301.

Schabert, Hans-Peter; and Pawlitzki, Rainer, to Siemens Aktiengesellschaft. Device for coupling nuclear reactor control rod to drive linkage therefor and for maintaining control rods in reactor core. 3,720,580, Cl. 176-36.00r.

Schachenmann, C., Dr., & Co.: *See—*
Grunbaumq Heinrich, 3,720,100.

Schaltbau Gesellschift mit beschrankter Haftung: *See—*
Fischer, Hubert, 3,720,802.

Scheidt, James E.: *See—*
Bianchetta, Donald L.; Sears, Richard L. M.; McWilliams, Orcenith D.; and Scheidt, James E., 3,720,282.

Scheinpflug, Hans: *See—*
Widdig, Arno; Kuhle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, 3,720,682.

Schering AG: *See—*
Hoyer, Georg-Alexander; and Roder, Kurt, 3,720,769.
Junghans, Klaus; and Ropke, Horst, 3,720,694.

Schiefer, Erich: *See—*
Konig, Josef; and Schiefer, Erich, 3,720,745.

Schindler, Walter; and Zuest, Armin, to Ciba-Geigy Corporation. [4-(10, 11-dihydro-5H-dibenzo[a,d] cyclohepten-10-yl-1-piperazinyl)-alkyl]-3-alkyl-2-imidazolidinones as CNS depressants. 3,720,676, Cl. 260-268.0tr.

Schindler, Walter; Schmid, Erich; and Zuest, Armin, to Ciba-Geigy Corporation. 4-(Thieno [2,3-b] [1,5] benzothiazep in-4-yl)-

piperazinyl-alkyl-3-alkyl-2-imidazolidinones as CNS-depressants. 3,720,677, Cl. 260-268.0tr.
Schlegel, Fred. Trailer hitch guide assembly. 3,720,000, Cl. 33-264.000.
Schlumberger, N., & Cie: *See*—
Herubel, Jean Frederic, 3,719,968.
Schlumberger Technology Corporation: *See*—
Schmidt, Arthur W., 3,720,912.
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Stoffregen, Karl Heinz, 3,720,347.
Schmid, Erich: *See*—
Schindler, Walter; Schmid, Erich; and Zuest, Armin, 3,720,677.
Schmid, Karl: *See*—
Gelbe, Horst; and Schmid, Karl, 3,720,647.
Schmidt, Arthur W., to Schlumberger Technology Corporation. Methods for investigating earth formations. 3,720,912, Cl. 340-15.5bh.
Schmidt, Bernard H., Jr., to Motorola, Inc. Solid-state relay. 3,720,848, Cl. 307-251.000.
Schmidt, Erich, to Maschinenfabrik Zuckermann Komm. Ges. Contour-copying apparatus. 3,720,243, Cl. 142-7.000.
Schmidt, Wolfgang: *See*—
Wanner, Karl; Schmidt, Wolfgang; Bleicher, Manfred; Sigg, Horst; Lehmann, Werner; and Burklin, Max, 3,720,269.
Schneider, Irwin. Information storage using color centers in alkali fluorides. 3,720,926, Cl. 340-173.0cc.
Schnell, Hermann: *See*—
Metzner, Wolfgang; Fuhr, Karl; Rudolph, Hans; Schnell, Hermann; and Heine, Hans-Georg, 3,720,635.
Schnellpressenfabrik Frankenthal Albert & Cie Aktiengesellschaft: *See*—
Frey, Rudolf; Niedermaier, Arnold; and Maier, Peter, 3,720,163.
Schnieder, Jost: *See*—
Eidinger, Adolf; Sanders, Mathias; and Schnieder, Jost, 3,720,799.
Schools, Rodman S.; and Sincerbox, Glenn T., to International Business Machines Corporation. Recording in reversible, photochromic medium. 3,720,921, Cl. 340-173.01m.
Schor, Ferdinand William, to AMP Incorporated. Filter assembly for printed circuit board connector. 3,720,903, Cl. 339-14.00r.
Schrock, James Douglas, to Moore, Samuel, & Company. Composite tubing. 3,720,235, Cl. 138-137.000.
Schropfer, Karl Heinrich: *See*—
Friedrichs, Josef; Schropfer, Karl Heinrich; and Kloren, Ulrich, 3,720,429.
Schroth, John J. Solar energy for warming objects, such as golf balls and the like. 3,720,197, Cl. 126-270.000.
Schuh, Frank J.: *See*—
Allen, William G.; LeVelle, James A.; and Schuh, Frank J., 3,720,267.
Schulein, Joseph: *See*—
Schulein, Joseph; and Kortman, Joe M., 3,720,933.
Schulein, Joseph; and Kortman, Joe M., 50% to Hayward, H. Dutton; Trustee of the Hilda Trusts Nos. 1-9, 50% to Schulein, Joseph and Schulein, Margaret A. Signaling system with signal level differentiation. 3,720,933, Cl. 340-183.000.
Schulein, Margaret A.: *See*—
Schulein, Joseph; and Kortman, Joe M., 3,720,933.
Schultz, Ralph H., to Peripheral Sciences, Inc. Card marking apparatus. 3,720,810, Cl. 235-61.11r.
Schulze, Ernst: *See*—
Breuer, Herman; and Schulze, Ernst, 3,720,683.
Breuer, Hermann; Schulze, Ernst; and Treuner, Uwe D., 3,720,674.
Breuer, Hermann; and Schulze, Ernst, 3,720,685.
Schunack, Johannes, to Morat, Franz, G.m.b.H. Method and apparatus for translating color information of a pattern into recordings. 3,720,779, Cl. 178-5.20r.
Schuplin, Jerome T., to Fastway Fasteners, Inc. Clip for securing conduit boxes to metal dry wall studs. 3,720,395, Cl. 248-205.00r.
Schurawski, Siegfried; and Kropp, Walter, to Linde Aktiengesellschaft. Hydraulic system and valve therefor. 3,720,059, Cl. 60-421.000.
Schwenk, Kurt; and Hablitzel, Hermann, to Volkswagenwerk Aktiengesellschaft. Method for molding undercut slots in motor vehicle body parts. 3,720,746, Cl. 264-219.000.
Schwochow, Friedrich; and Heinze, Gerhard, to Farbenfabriken Bayer Aktiengesellschaft. Production of synthetic zeolites of Faujasite structure. 3,720,756, Cl. 423-329.000.
Scola, Daniel A.; and Basche, Malcolm, to United Aircraft Corporation. Treatment of carbon fibers. 3,720,536, Cl. 117-47.00r.
Scott, J. O.: *See*—
Murphy, Bob G.; and Scott, J. O., 3,720,263.
Scott Paper Company: *See*—
Kunc, Frank C., 3,720,574.
Scott, William B., to Whitney, W. A., Corporation. Adjustable stripper with stroke control. 3,720,125, Cl. 83-146.000.
Scovill Manufacturing Company: *See*—
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Sears, Richard L. M.: *See*—
Bianchetta, Donald L.; Sears, Richard L. M.; McWilliams, Orcenith D.; and Scheidt, James E., 3,720,282.
Seibel, Markus; and Thoese, Klaus, to Kalle Aktiengesellschaft. Process for improving the surface adhesion of shaped articles made from polyesters. 3,720,539, Cl. 117-138.80f.
Seidel, William B., to Cincinnati Milacron Inc. Tool change apparatus. 3,719,987, Cl. 29-568.000.
Seifert, Richard M.: *See*—
Buttery, Ron G.; Seifert, Richard M.; Lundin, Robert E.; and Guadagni, Dante G., 3,720,672.
Seiz, Edward A. Fire resistant storage structure. 3,720,268, Cl. 169-2.00r.
Seizaburo, Shigeta: *See*—
Fujisaki, Yoshisato; Fukuma, Noboru; Chayamiti, Hiroshi; Okamoto, Toshio; Seizaburo, Shigeta; and Kitago, Takanobu, 3,720,576.
Seki, Tatsujiro: *See*—
Soda, Shigenari; Seki, Tatsujiro; Saiguji, Shigeru; and Hayashi, Motoshige, 3,720,572.
Sekisui Kaseihin Kogyo Kabushiki Kaisha: *See*—
Soda, Shigenari; Seki, Tatsujiro; Saiguji, Shigeru; and Hayashi, Motoshige, 3,720,572.
Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., to American Home Products Corporation. 6-Substitute D-4-oxouretidino-1-yl penicillanic acids. 3,720,666, Cl. 260-239.100.
Serio, John P.: *See*—
Chatterji, Arun K.; Custozzo, Marianne; Kiriazides, Demosthenes K.; Russell, John J., Jr.; and Serio, John P., 3,720,617.
Servomex Controls Limited: *See*—
Borer, Alan John, 3,720,846.
Setronics Corporation: *See*—
Bemis, Winfield W., 3,720,147.
Sevenich, Robert J., to Minnesota Mining and Manufacturing Company. Biaxially oriented polycarbonate modified polyester film. 3,720,732, Cl. 260-860.000.
Sewell, Robert G. S.; and Halsey, Carl C., to United States of America, Navy. Apparatus and method for terrain clearance. 3,720,166, Cl. 102-22.000.
Shanok, Jesse P.: *See*—
Shanok, Victor; and Shanok, Jesse P., 3,720,567.
Shanok, Victor; and Shanok, Jesse P., to Glass Laboratories Company. Light reflective composite molding. 3,720,567, Cl. 161-5.000.
Sharman, Samuel H., to Chevron Research Company. Detergent composition containing hydrogenated alpha olefin sulfonates. 3,720,629, Cl. 252-535.000.
Shaver, Donald E.: *See*—
Minich, Paul R., Jr.; and Shaver, Donald E., 3,720,226.
Shaw, Irving F.: *See*—
Goldberg, Raymond; and Shaw, Irving F., 3,720,250.
Shay, Anthony Joseph: *See*—
Barbatschi, Ferdinand; Borders, Donald Bruce; and Shay, Anthony Joseph, 3,720,691.
Shell Oil Company: *See*—
Kirby, Peter; and Hass, Duane K., 3,720,687.
Shelton, Marcus H.; and James, Ralph, Jr., to Esso Research and Engineering Company. Wrapping of baled polymers. 3,720,742, Cl. 264-102.000.
Shelton, William A.: *See*—
Johnson, Bruce K.; and Shelton, William A., 3,720,145.
Shephard, Basil S., to Westinghouse Electric Corporation. Temperature responsive actuation. 3,720,107, Cl. 73-363.700.
Sherard, James L. Making holes in the ground and freezing the surrounding soil. 3,720,065, Cl. 61-36.00a.
Shimazu, Toshio: *See*—
Isobe, Takehiro; Shimazu, Toshio; Ogawa, Koji; Arake, Yukio; Wakamatsu, Aizu; and Hashimoto, Tatsuji, 3,720,510.
Shimizu, Shigeki: *See*—
Toda, Hideo; Shimizu, Shigeki; and Ihara, Hisato, 3,720,618.
Shimizu, Tetsuji; Hibino, Sohei; Sumida, Hajime; Ueno, Shinichi; and Muraoka, Tateki, to Kabushiki Kaisha Tokai Rika Denki Seisakusro. Apparatus for detecting a position of electron beam for use with a cathode-ray tube. 3,720,857, Cl. 315-10.000.
Shinohara, Hiroshi: *See*—
Masunaga, Kunihiko; Shinohara, Hiroshi; and Kondo, Toshihito, 3,720,589.
Shinohara, Yoshiyuki; and Isaka, Toshiyuki, to Mitsui Petrochemical Industries, Ltd. Process for preparation of cresol and acetone from cymene hydroperoxide. 3,720,716, Cl. 260-593.00a.
Shlesinger, Bernard Edward, Jr. Magnetically actuated reed switch assembly. 3,720,895, Cl. 335-205.000.
Shoemaker, John D., Jr.: *See*—
Riley, Kenneth L.; and Shoemaker, John D., Jr., 3,720,602.
Shono, Masaru. Apparatus for forming sand piles. 3,720,063, Cl. 61-11.000.
Shook, Paul R.; Sweeney, Earl G.; and Duncan, Ralph E., to FMC Corporation. Separation of particulate material by the application of electric fields. 3,720,312, Cl. 209-130.000.
Shreffler, Wesley E.: *See*—
Barnett, Eugene J.; and Shreffler, Wesley E., 3,720,196.
Shroff, Shrenik: *See*—
Vassiliades, Anthony; Nauman, Edward F.; and Shroff, Shrenik, 3,720,579.
Shur, Ira; and Mulle, Theodore, Jr., to Flair Manufacturing Corporation. Combination purge and regulating valve. 3,720,233, Cl. 137-625.170.
Sianesi, Dario; Fontanelli, Renzo; and Grazioli, Alberto, to Montecatini Edison S.p.A. Perfluoropolyethers modified with quinone compounds in the polymeric chain and process for their preparation. 3,720,646, Cl. 260-63.0ha.

Sibeud, Jean Paul, to Berliet, M., Automobiles. Pick-up devices for detecting the passage of a movable member of a scale assembly of an apparatus for accurately measuring the specific consumption of internal combustion engine. 3,720,934, Cl. 340-207.000.

Sidebotham, Nelson Robert: *See—*
Woodward, Robert Newell; and Sidebotham, Nelson Robert, 3,720,516.

Siegel, Richard D.: *See—*
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Siemens Aktiengesellschaft: *See—*
Albrecht, Adolf; Von Borcke, Ulruch; Hini, Paul; and Hieronymus, Hans, 3,720,901.
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Massar, Ernst, 3,720,847.
Schabert, Hans-Peter; and Pawlitzki, Rainer, 3,720,580.
Sohlbrand, Heinrich, 3,720,542.
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Siemens-Electrogerate GmbH: *See—*
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Sigg, Horst: *See—*
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Sigri Elektrographit GmbH: *See—*
Drnges, Ernst; and Wagner, Fritz, 3,720,836.
Overhoff, Dietrich, 3,720,759.

Sikora, Joseph A., to Sparton Corporation. Directional hydrophone buoy system. 3,720,909, Cl. 340-8.00r.

Silsby, John N., to Acron Corporation. Magnetic recording system for repertory dialer. 3,720,795, Cl. 179-100.2md.

Silver, H. Graham: *See—*
Gardner, Phillip J.; Silver, H. Graham; Ahmed, Samir A.; and Heller, Adam, 3,720,855.

Simonet, Guy, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method of production of pure hydrogen and mixtures containing hydrogen in definite proportions. 3,720,042, Cl. 55-25.000.

Simonnot, Jack: *See—*
Jardinier, Pierre; and Simonnot, Jack, 3,720,153.

Simpson, Edgar A.; and Doyle, Carroll F., to Grace, W. R., & Co. Hydrophobic silica. 3,720,532, Cl. 106-308.00q.

Sincerbox, Glenn T.: *See—*
Schools, Rodman S.; and Sincerbox, Glenn T., 3,720,921.

Singer Company, The: *See—*
Ivanko, Michael F., 3,720,178.

Singleton, Norman R.: *See—*
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Sinkey, Vernon J.: *See—*
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Sisa, Laszlo: *See—*
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Sitko, Leopold S., to Pullman Incorporated. End-of-railway-car cushioned draft assembly. 3,720,325, Cl. 213-8.000.

Skagerlund, Lars-Erik, to Aktiebolaget Bofors. Device for a transmitter receiver unit which gives an indication when an object reflects radiation transmitted from the transmitter to the receiver. 3,720,468, Cl. 356-4.000.

Skarlos, Leonidas, to Texaco Inc. Preparation of oxalic acid. 3,720,591, Cl. 204-59.00r.

SKF Industrial Trading and Development Company, N.V.: *See—*
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Sletzinger, Meyer: *See—*
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Sloma, Richard O.: *See—*
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Small, Charles B.: *See—*
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Smart, Jay A., to Won-Door Corporation. Door control system for folding doors. 3,720,254, Cl. 160-193.000.

Smeets, Alfred, to Citrex, S.A. Aquenous detergent compositions. 3,720,621, Cl. 252-135.000.

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Smith, Charles L.; and Webster, William C., to Corson, G. & W. H., Inc. Process for treating aqueous chemical waste sludges and composition produced thereby. 3,720,609, Cl. 210-59.000.

Smith, George A. W.: *See—*
Lang, Albert L.; and Smith, George A. W., 3,720,937.

Smith, Theodore M. Quick change spindle adapter or chuck. 3,720,417, Cl. 279-82.000.

Smula, Karl Ulrich: *See—*
Wegmann, Horst; Smula, Karl Ulrich; Bartz, Lothar; and Stoltefuss, Wilhelm, 3,720,299.

Snam Progetti S.p.A.: *See—*
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Snyder, James H.; and Riedner, William E., to Clark Equipment Company. Automatic storage system order picker cab construction. 3,720,327, Cl. 214-16.40a.

Snyder, Paul W., Jr.: *See—*
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Societa Italiana Resine S.p.A.: *See—*
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Societa Italiana Resines S.p.A.: *See—*
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Societe Anonyme dite: L'Oreal: *See—*
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Societe Anonyme: Degremont Societe Generale d'Epuration et d'Assainissement: *See—*
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Societe d'Etudes et de Recherches de Ventilation et d'Aeraulique: *See—*
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Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See—*
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Societe Nationale des Petroles d'Aquitaine: *See—*
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Societe Rhodiaceta: *See—*
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Societe Technique d'Accessoires Specialises: *See—*
Archer, Jean-Francois, 3,720,434.

Societe Wendel Sidelor S.A.: *See—*
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Soda, Shigenari; Seki, Tatsujiro; Saiguji, Shigeru; and Hayashi, Motoshige, to Sekisui Kaseihin Kogyo Kabushiki Kaisha. Synthetic wood and a method for preparation thereof. 3,720,572, Cl. 161-143.000.

Sohlbrand, Heinrich, to Siemens Aktiengesellschaft. Process for producing dense metal oxide coating on semiconductor. 3,720,542, Cl. 117-201.000.

Soniciens, Inc.: *See—*
Cummins, Millard M.; Hankins, Thomas E.; Best, Robert; and Biesecker, Frederick, 3,720,402.

Sorimachi, Kanehiro: *See—*
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Sota, Kou: *See—*
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Spahr, Gene L., to FMC Corporation. Auxiliary motor starter control circuitry including remote and local control of plural batteries. 3,720,839, Cl. 290-37.000.

Sparton Corporation: *See—*
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Special Optics Inc.: *See—*
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Spectral Data Corporation: *See—*
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Spectrospin AG: *See—*
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Sperry Rand Corporation: *See—*
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Spohr, Albert R.: *See—*
Waters, Robert S.; and Spohr, Albert R., 3,720,851.

Spragg, Robert Claude; and Whitehouse, David John, to Rank Organisation Limited, The. Method of measurement and apparatus therefor. 3,720,818, Cl. 235-151.320.

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Squibb, E. R., & Sons: *See—*
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Squibb, E. R., & Sons, Inc.: *See—*
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Welch, Arnold D.; and Dolfini, Joseph Edward, 3,720,665.

St. Paul, Peter. Adjustable rod construction for trophies and similar articles. 3,720,430, Cl. 287-62.000.

Staats, Henry N., to General Binding Corporation. Constant tension winding apparatus. 3,720,385, Cl. 242-75.450.

Staats, Henry N.; and Morrissey, Neal J., to General Binding Corporation. Method and apparatus for individually laminating bound sheets. 3,720,564, Cl. 156-477.00b.
Staehlin, John H.: *See—*
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Stahl, Lawrence E.: *See—*
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Standard Oil Company (Indiana): *See—*
Unger, Steve A., 3,720,365.
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Gallagher, James J., 3,720,533.
Stangeland, Phillip F. Raffe sail for boats. 3,720,180, Cl. 114-102.000.
Stanley, Charles C., to TRW Inc. Microelectronic circuit production. 3,720,515, Cl. 96-38.400.
Statton, Gary L., to Atlantic Richfield Company. Organic hexafluorophosphates, arsenates or antimonates as accelerators for curing epoxy resins. 3,720,634, Cl. 260-18.0pf.
Stauffer Chemical Company: *See—*
Kopacki, Adam F.; and Deatcher, John H., 3,720,734.
Letchworth, Peter E., 3,720,766.
Melotik, Donald J., 3,720,547.
Stauffer, James D., to Bonham, Grant & Brundage, Limited. Method and apparatus for conditining and disposing of alum sludge from water treatment. 3,720,608, Cl. 210-56.000.
Stedman, Robert N.: *See—*
Allen, Norman R.; Boggs, Roger L.; and Stedman, Robert N., 3,720,448.
Steel Parts Corporation: *See—*
Federspill, George M., 3,719,985.
Steffe, Harlan E. Tractor drawbar extension. 3,720,427, Cl. 280-405.00r.
Stein, Phillip C.: *See—*
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Steitz, Richard Ralph, to RCA Corporation. Method of joining solder balls to solder bumps. 3,719,981, Cl. 29-423.000.
Sterling Drug Inc.: *See—*
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Sternbach, Leo Henryk: *See—*
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Stettler, Christian, to Greiner Electronic AG. Fluid metering pump. 3,720,353, Cl. 222-380.000.
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Steven Manufacturing Company: *See—*
Ramirez, Carlos M., 3,720,412.
Stevens, Hugh Dexter; and Muller, Thomas Emery, to International Telephone and Telegraph Corporation. Process for producing high performance crimped rayon staple fiber. 3,720,743, Cl. 264-168.000.
Stillit, Gerald Barry: *See—*
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Stock, David K., to FMC Corporation. Apparatus for making thermoplastic handle bags. 3,720,141, Cl. 93-33.000.
Stockstill, Calvin A. Apparatus for admixing liquids in predetermined ratio. 3,720,230, Cl. 137-564.500.
Stoddard, Darrell D., to Sierracin Corporation, The. Acyloxy endblocked 3-α-acylamidopropyl or 3-α-haloacylamido-propyl trisiloxanes and process therefor. 3,720,699, Cl. 260-448.80r.
Stoffregen, Karl Heinz, to Schmalbach-Lubeca-Werke Aktiengesellschaft. Packaging container. 3,720,347, Cl. 220-46.00r.
Stog, W., KG, Industrie-und Rohrleit-ungsbau: *See—*
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Stog, Wilhelm; and Krefter, August, to Stog, W., KG, Industrie-und Rohrleit-ungsbau. Expansion joint. 3,720,474, Cl. 404-47.000.
Stokeld, Richard W., Jr.: *See—*
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Stoltefuss, Wilhelm: *See—*
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Stoop, Adriaan. Complex of patio houses. 3,720,023, Cl. 52-169.000.
Stout, Don R.; and Klein, Jorge, to Case, J. I., Company. Earth working implement. 3,720,338, Cl. 214-776.000.
Strauss, Edgar, to Ruti Machinery Works Ltd.; formerly Caspar Honegger, Ruti ZH. Arrangement for forming a selvage for use on a loom. 3,720,236, Cl. 139-54.000.
Strauss, Edgar, to Ruti Machinery Works Ltd. Arrangement for monitoring weft threads. 3,720,238, Cl. 139-12.000.
Strong, John D. Inconspicuous ranging device for golfers. 3,720,467, Cl. 356-3.000.
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Sumida, Hajime: *See—*
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Sumitomi Electric Industry Company Ltd.: *See—*
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Sumitomo Chemical Co., Ltd.: *See—*
Yagi, Yoshiharu; Hino, Minoru; Noguchi, Takanobu; Wada, Motomu; Yasuno, Kiyoshi; Sota, Kou; Ito, Nobuo; and Nakai, Yasuto, 3,720,652.
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Sunbeam Corporation: *See—*
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Suvanto, Antti; and Nilsson, Hilding, to Aktiebolaget Asea-Atom. Manipulating tool for a nuclear reactor component provided with a handle. 3,720,436, Cl. 294-88.000.
Suzuki, Shigeru, to Kabushiki Kaisha Ricoh. Transfer device for images by the use of liquid development electrophotography. 3,720,183, Cl. 118-637.000.
Suzuki, Shigeyuki; Kumamoto, Kotaro; Kaneda, Isamu; and Sakai, Shoushiro, to Kurita Water Industries Limited, mesne. Cationic surface active substance, method for manufacturing same. 3,720,624, Cl. 252-357.000.
Suzuki, Syoichi: *See—*
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Suzuki, Yasoji, to Tokyo Shibaura Electric Co., Ltd. Logical circuit arrangement. 3,720,841, Cl. 307-221.00c.
Swanson, George J.: *See—*
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Swartz, Jerome; and Wilson, Donald K., to Special Optics Inc. System of polarizing optical energy and transmitting the same through media. 3,720,457, Cl. 350-157.000.
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Sygnator, Henry A., to Illinois Tool Works Inc. Sheet metal nut. 3,720,251, Cl. 151-21.00r.
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Tabler, Donald C., to Phillips Petroleum Company. Dehydrogenation of cyclohexane or mono- or polyalkylcyclohexanes. 3,720,724, Cl. 260-668.00d.
Tada, Takashi: *See—*
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Takeda, Tohru, to Tamura Electric Works, Limited. Electromagnetic counters. 3,720,811, Cl. 235-92.00c.
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Tanaka, Shunichi: *See—*
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Tanaka, Tokuji; and Hayashi, Hideaki, to Sankyo Company Limited. Prevention of caking of powdered sugar. 3,720,521, Cl. 99-141.00r.
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Tang, Henry; and Harper, William, Jr., to Research Corporation. Parametric frequency conversion. 3,720,882, Cl. 331-3.000.
Tannenbaum, Steven R.; Sinskey, Anthony J.; and Maul, Stephen B., to Massachusetts Institute of Technology. Process of reducing the nucleic acid content in yeast. 3,720,585, Cl. 195-98.000.
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Tate, Jack F., to Texaco Inc. Method for stimulating well production. 3,720,265, Cl. 166-307.000.
Taterzynski, Sylvester R.; and Raeburn, George Dand. Spark gap devices and methods and apparatus for making same. 3,720,560, Cl. 156-268.000.
Taylor, Clarence R., to Eastman Kodak Company. Microfiche holder. 3,720,463, Cl. 353-27.000.
Taylor, Clifford A. Reaming apparatus. 3,720,476, Cl. 408-71.000.
Taylor, Melvin L.; and Ronzio, Nelson J., to American Metal Climax, Inc. Treatment of nickel leach liquor. 3,720,749, Cl. 423-141.000.
TDK Electronics Company, Limited: *See—*
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Teledyne Inc.: *See—*
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Telephone Laboratories, Incorporated: *See—*
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Telettra-Laboratori di Telefonia Elettronia e Radio S.p.A.: *See—*
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Kahanic, Francis P., 3,720,861.
Nordin, Robert W., 3,720,076.
Tell, Peter, to Aktiebolaget Piab. Device for generating an air system by means of an ejector. 3,720,482, Cl. 417-179.000.
Teller, Daniel M.: *See—*
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Tension Envelope Corporation: *See—*
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Tessler, Martin M.; and Rutenberg, Morton W., to National Starch and Chemical Corporation. Preparation of starch esters. 3,720,662, Cl. 260-233.500.
Tessler, Martin M., to National Starch and Chemical Corporation. Preparation of starch esters. 3,720,663, Cl. 260-233.500.
Tetal (Power Hydraulics) Limited: *See—*
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Hopkins, Walker L.; and Edwards, Richard R., 3,720,730.
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Trost, George P., 3,720,503.
Watson, William J.; and Husband, Edwin H., 3,720,920.
Tezuka, Sigeru; Tanaka, Shinichi; and Taguchi, Seiichi, to Fuji Photo Film Co., Ltd. Method and apparatus for correcting the zigzag movement of flexible strip. 3,720,360, Cl. 226-3.000.
Theisen, John W. Prefabricated stackable stair unit. 3,720,024, Cl. 52-185.000.
Thermo King Corporation: *See—*
Martin, Robert L.; Howland, Leland L.; and Eichinger, Le Roy J., 3,720,842.
Thielemann, Rudolf H.: *See—*
Danesi, Wilbert P.; and Thielemann, Rudolf H., 3,720,509.
Thoese, Klaus: *See—*
Seibel, Markus; and Thoese, Klaus, 3,720,539.
Thomas, Martin: *See—*
Feldman, Julian; and Thomas, Martin, 3,720,679.
Thompson, Francis T.: *See—*
Reeves, John R.; Dow, Bruce R.; and Thompson, Francis T., 3,720,845.
Thompson, William A., to International Business Machines Corporation. Cryogenic arc furnace and method of forming materials. 3,720,598, Cl. 204-328.000.
Thomson-CSF: *See—*
Bregeault, Marc, 3,720,865.
Le Seigneur, Pierre, 3,720,880.
Thorn Electrical Industries Limited: *See—*
Jones, Ralph Edwin, 3,720,929.
Thummler, Ursus: *See—*
Muller, Fritz; Werner, Hugo; Werner, Bruhl; and Thummler, Ursus, 3,720,506.
Tietz, Wolfgang: *See—*
Wollner, Johannes; and Tietz, Wolfgang, 3,720,636.
Tilford, Albert R.; Boettger, Harold E.; and Yew, Ming-Chih, to General Motors Corporation. Vacuum servo vehicle leveling system. 3,720,424, Cl. 280-124.00f.
Timken Company, The: *See—*
Dominik, Erich Dietmar, 3,720,450.
Tindal, Ian, to Bechtel International Corporation, mesne. Method of threading a tendon through a sheath. 3,719,982, Cl. 29-452.000.
Ting, Youn H., to Texas Instruments, Incorporated. Food warming apparatus. 3,720,807, Cl. 219-441.000.
Tipping, Anthony Edgar: *See—*
Haszeldine, Robert Neville; and Tipping, Anthony Edgar, 3,720,644.
Toda, Hideo; Shimizu, Shigeki; and Ihara, Hisato, to Toda Kogyo Co., Ltd. Method of producing a powder of cobalt-containing, needle-like shaped gamma-ferric oxide particles as magnetic recording material. 3,720,618, Cl. 252-62.560.
Toda Kogyo Co., Ltd.: *See—*
Toda, Hideo; Shimizu, Shigeki; and Ihara, Hisato, 3,720,618.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Kubo, Mitsuo; and Nakajima, Shunichi, 3,720,409.
Suzuki, Yasoji, 3,720,841.
Toland, William G.: *See—*
Lapporte, Seymour J.; and Toland, William G., 3,720,706.
Tomlin, Garland L., Jr., to United States of America, Navy. Fault detection system. 3,720,935, Cl. 340-248.00r.
Toro Manufacturing Corporation: *See—*
Hunter, Edwin J., 3,720,272.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Sakomura, Toshio; Kisaki, Hisashi; Tada, Takashi; and Mabuchi, Shunsuke, 3,720,704.
Toyoshima, Hiroshi: *See—*
Izawa, Nobuharu; Kikuyama, Munetsugu; Toyoshima, Hiroshi; and Yamamoto, Ryuji, 3,719,976.
Trail-R-Signs: *See—*
Loper, Robert J., 3,720,012.
Trementozzi, Quirino A.: *See—*
Lee, Yoon Chai; and Trementozzi, Quirino A., 3,720,340.
Treuner, Uwe D.: *See—*
Breuer, Hermann; Schulze, Ernst; and Treuner, Uwe D., 3,720,674.
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Tricot, Marc: *See—*
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Triebel, Wolfgang: *See—*
Pohl, Gerhard; Rink, Karl-Heinz; Triebel, Wolfgang; Weiberg, Otto; and Weigert, Wolfgang, 3,720,689.
Triplex Safety Glass Comapny Limited: *See—*
King, Robert David, 3,720,541.
Trost, George P., to Texas Instruments, Incorporated. Solder clad metal. 3,720,503, Cl. 29-191.600.
Trouilhet, Achille: *See—*
Marie, Maurice; and Trouilhet, Achille, 3,720,081.
TRW Inc.: *See—*
Irwin, Arthur S., 3,719,979.
Stanley, Charles C., 3,720,515.
Tschabold, Donald F., to Allis-Chalmers Corporation. Lubrication system for grinding mill or the like. 3,720,288, Cl. 184-6.400.
Tschopp, Werner H.: *See—*
Keller, Toni W.; Laukien, Gunther R.; and Tschopp, Werner H., 3,720,816.
Tsuda, Yoshiaki: *See—*
Nakanishi, Michio; Arimura, Katsuo; and Tsuda, Yoshiaki, 3,720,670.
Tupper, Myron D., to Omark Industries, Inc. Side sharpenable cutter structures. 3,720,049, Cl. 56-291.000.
Turner, Howard E.: *See—*
Grubb, Willard L.; Turner, Howard E.; and Brazell, James W., 3,720,048.
Turner, James Keith: *See—*
Bryant, John C.; Turner, James Keith; Riley, James R.; and Aurich, Christoph W., 3,720,241.
Uchida, Jiro; and Osugi, Minoru, to Kabushiki Kaisha Komatsu Seisakusho. Vibrating table. 3,720,136, Cl. 91-35.000.
Uchiyama, Takashi, to Canon Kabushiki Kaisha. Flash apparatus for a camera. 3,720,144, Cl. 95-10.0ct.
Uchiyama, Takashi; and Sorimachi, Kanehiro, to Canon Kabushiki Kaisha. Electronic exposure control apparatus for a camera. 3,720,152, Cl. 95-53.0eb.
Ueda, Elizaburo. Horizontal shutter. 3,720,255, Cl. 160-199.000.
Ueda, Yasuo: *See—*
Inoue, Eiichi; Ueda, Yasuo; and Aizawa, Tatsuo, 3,720,619.
Ueeda, Ryuhei: *See—*
Imoto, Saburo; Ohara, Osamu; Nakamoto, Hisashi; Tanaka, Hisashi; and Ueeda, Ryuhei, 3,720,651.
Ueno, Shinichi: *See—*
Shimizu, Tetsuji; Hibino, Sohei; Sumida, Hajime; Ueno, Shinichi; and Muraoka, Tateki, 3,720,857.
Unger, Steve A., to Standard Oil Company (Indiana). Embossed container. 3,720,365, Cl. 229-2.500.

Union Carbide Corporation: *See—*
Berta, Remo Joseph; and Byrnes, Peter Gordon, 3,720,072.
Wartman, Lloyd H.; and King, Paul A., 3,720,216.
Union Oil Company of California: *See—*
Fenton, Donald M., 3,720,697.
Fenton, Donald M., 3,720,718.
Unique Industries, Inc.: *See—*
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Unit Process Assemblies, Inc.: *See—*
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United Aircraft Corporation: *See—*
Plowman, James S.; and Walsh, Thomas C., 3,720,480.
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Scola, Daniel A.; and Basche, Malcolm, 3,720,536.
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West, Roger F., 3,720,781.
United Kingdom Atomic Energy Authority: *See—*
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United Kingdom of Great Britain and Northern Ireland, Minister of Aviation Supply in Her Britannic Majesty's Government of the: *See—*
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Agriculture: *See—*
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Pittman, Allen G.; and Wasley, William L., 3,720,630.
Air Force: *See—*
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Army: *See—*
Beeker, Charles W.; and Crabtree, Royale R., 3,720,902.
Drzewiecki, Tadeusz M., 3,720,218.
Reithmeyer, Randolph A., Jr., 3,720,879.
Army, mesne: *See—*
Johnson, Theodore B.; Cole, William T., Jr.; and Stamm, Orval M., 3,720,169.
Pruett, George R., 3,720,835.
Atomic Energy Commission: *See—*
Dixon, Norman E., 3,720,098.
Sampson, William Boyd; and Meyer, Garber, 3,720,777.
National Aeronautics and Space Administration: *See—*
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Gray, Vernon H., 3,720,075.
Navy: *See—*
Allen, Philip J., 3,720,834.
Barrett, Frederick B.; Nielsen, Peter A.; and Hrabe, Delmer W., 3,720,394.
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Catchpole, Clive E., 3,720,838.
Denningham, Robert L., 3,720,472.
Dinsmoor, Theodore E., 3,720,165.
Gill, George Herbert, 3,720,093.
Griffith, James R., 3,720,639.
Kollmeyer, Herman R., 3,720,101.
Koloc, Paul M., 3,720,885.
McCoy, Bernard J.; and Rans, Frank O., 3,720,908.
McKechnie, John C.; and Grimmer, Paul D., 3,720,007.
Meyer, William J.; and Staehlin, John H., 3,720,947.
Quick, James E.; and Venezky, David L., 3,720,736.
Richter, Juergen H., 3,720,949.
Rosfelder, Andre M., 3,720,433.
Sewell, Robert G. S.; and Halsey, Carl C., 3,720,166.
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Universal Oil Products Company: *See—*
Gleim, William K. T., 3,720,603.
Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., 3,720,628.
Mitsche, Roy T.; and Michalko, Edward, 3,720,726.
Pollitzer, Ernest L., 3,720,728.
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Universal Research Laboratories, Incorporated: *See—*
Polanek, Edward L.; and Micek, Daniel W., 3,720,939.
University of Pennsylvania, The; trustees: *See—*
Kron, Reuben E., 3,720,097.
Upchurch, Edward F.: *See—*
Alvarez, Jose A.; and Upchurch, Edward F., 3,720,041.
Urban, Gabor: *See—*
Garay, Lajos; Urban, Gabor; Romhanyi, Andras; and Sisa, Laszlo, 3,720,028.
Uthurriague, Juan B. Structure for building furniture. 3,720,444, Cl. 297-463.000.
Vahlensieck, Hans-Joachim: *See—*
Junger, Hans; Kotzsch, Hans-Joachim; Vahlensieck, Hans-Joachim; and Weissenfels, Franz, 3,720,642.
Van Auken, John A., to Saxon Industries, Inc. Recording system and method for copying machine. 3,720,785, Cl. 178-6.60a.
Van Bergen, Frederick H. Weight compensator for barbecue spits. 3,720,157, Cl. 99-421.00h.
Van Burleigh, Johannes Balfour, 1/3 to Breas, Cornelia and 1/3 to Breas, Margo Charlotte. Roof building element and method of making a roof. 3,720,033, Cl. 52-741.000.
Van Bussel, Peter J. Method of making a peripherally grooved sheet metal article. 3,719,980, Cl. 29-159.00r.
van der Lely, Cornelis. Universal tractors. 3,720,047, Cl. 56-15.600.
Van Der Veken, Germaine. Combined box and construction element with connecting means connectable from two directions. 3,720,015, Cl. 46-11.000.
van Doorne, Hubertus Josephus: *See—*
Van Doorne, Hubertus Josephus; and Ludoph, Hemmo Hermannes Johannes (said Ludoph assor to said), 3,720,113.
Van Doorne, Hubertus Josephus; and Ludoph, Hemmo Hermannes Johannes, said Ludoph assor to said van Doorne, Hubertus Josephus. Flexible continuous power transmission means. 3,720,113, Cl. 74-236.000.
Van Houten, Robert. Hydriding process. 3,720,751, Cl. 423-252.000.
Van Houten, Robert. Massive metal hydride structures and methods for their preparation. 3,720,752, Cl. 423-255.000.
Van Orden, Lynn L., to Bausch & Lomb Incorporated. Symmetrical lens. 3,720,458, Cl. 350-227.000.
Van Saum, Kennedy, Corporation: *See—*
Hukki, Risto, 3,720,307.
van Scoy, Davis A., to Helmerich & Payne, Inc. Operator. 3,720,138, Cl. 91-1.000.
Van Smith, William, to Lectrolarm Custom Systems, Inc. Vehicle activity recording device. 3,720,943, Cl. 346-7.000.
Van Wierst, Wilhelmus Lambertus, to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V. Rotatable hot metal car. 3,720,173, Cl. 105-271.000.
Vanderlinden,AndreJacquesEmle; dradzitzkyBlgiu; and Labofina,SOC AN, to Process forrducingthalfricacid content. ofalklarlslfonic acids. 3,720,707, Cl. .
Varga, Andrew. Fluid meter. 3,720,106, Cl. 73-273.000.
Vargiu, Silvio: *See—*
Nistri, Ugo; Vargiu, Silvio; Giovanni, Sfsto San; and Pitzalis, Mario, 3,720,645.
Varian Associates: *See—*
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Variety Products Inc.: *See—*
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Varner, George C.: *See—*
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Vassallo, Franklin A.: *See—*
Adams, Donald E.; and Vassallo, Franklin A., 3,720,103.
Vassiliades, Anthony; Nauman, Edward F.; and Shroff, Shrenik, to Champion International Corporation. Fibrous substrates with microcapsular opacifier. 3,720,579, Cl. 162-162.000.
Vaughn, Jacard M. Motorcycle carrier. 3,720,333, Cl. 214-450.000.
Vehrs, Charles L., Jr., to North American Rockwell Corporation. Time-domain correlator for spatial filtering in a pulsed energy system. 3,720,950, Cl. 343-17.2pc.
Vella-Coleiro, George Philip: *See—*
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Velsicol Chemical Corporation: *See—*
Krenzer, John; and Richter, Sidney B., 3,720,684.
Venezky, David L.: *See—*
Quick, James E.; and Venezky, David L., 3,720,736.
Ventre, Pierre; and Ferraris, Robert, to Regie Nationale des Usines Renault and Automobiles Peugeot. Electromagnetic and manual control systems of vehicle door locks. 3,720,084, Cl. 70-264.000.
Vercillo, Peter A., to Continental Can Company, Inc. Safety closure. 3,720,342, Cl. 215-9.000.
Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*
Kaser, Arthur, 3,720,581.
Vertin, Thomas D. Machine element drive means including a gear rack assembly of individual square teeth. 3,720,114, Cl. 74-424.600.
Vertin, Thomas D. Machine element drive means. 3,720,115, Cl. 74-424.600.
Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen: *See—*
Lehner, Karl, 3,720,382.
Victor Company of Japan, Limited: *See—*
Ishii, Yoshikazu; Hayashi, Masamichi; and Tanaka, Shunichi, 3,720,787.
Vieweg, Gunther; Kappius, Friedrich; Ott, Hans; and Wenk, Jurgen, to Siemens Aktiengesellschaft. Device for dampening oscillations in a midget motor. 3,720,852, Cl. 310-90.000.
Viking Aircraft Corporation, mesne: *See—*
Foote, Robert E., 3,720,387.
Vilain, Robert H., to Compagnie Francaise d'Entreprises Metalliques. Installations for submarine work. 3,720,066, Cl. 61-46.500.
Villeroy & Boch Keramische Werke KG: *See—*
de Vinck, Luc Gaston, 3,720,490.
Vincenty, Henry Edward, to Euclid, Inc. Combustion air intake system for an off-the-road vehicle. 3,720,279, Cl. 180-54.00a.
Voegele, Lawrence R., to Jostens, Inc. Molding structure for casting articles having a negative draft portion. 3,720,397, Cl. 249-57.000.
Vogel, Hans, to Gebr. Giulini GmbH. Method of forming a phosphate glass to inoculate water. 3,720,505, Cl. 65-21.000.
Volkswagenwerk Aktiengesellschaft: *See—*
Schwenk, Kurt; and Hablitzel, Hermann, 3,720,746.

Voltz, Jacques: *See—*
Raupp, Gunther; and Voltz, Jacques, 3,720,671.

Von Borcke, Ulruch: *See—*
Albrecht, Adolf; Von Borcke, Ulruch; Hini, Paul; and Hieronymus, Hans, 3,720,901.

Von Bruning, Drost M., to Mettler Instrumente AG. Thin-film resistance thermometer having low ohmic contact strips. 3,720,900, Cl. 338-25.000.

Vyzkumny ustav obrabecich stroju a obrabeni: *See—*
Zeleny, Jaromir, 3,720,134.

Waagner-Biro Aktiengesellschaft: *See—*
Fritz, Kurt; Lippitsch, Josef M.; and Lurf, Gunther, 3,720,259.

Wacker-Chemie G.m.b.H.: *See—*
Bergmeister, Eduard; Kirst, Paul-Gerhard; Nitzsche, Siegfried; Pirson, Ewald; and Roth, Michael, 3,720,538.

Wada, Hiroyuki; Kawakami, Yasumasa; and Kamihigoshi, Tutomu, to Daikin Kogyo Co., Ltd. Novel aluminum fluoride catalyst and process for hydrofluorinating acetylene using same. 3,720,722, Cl. 260-653.400.

Wada, Motomu: *See—*
Yagi, Yoshiharu; Hino, Minoru; Noguchi, Takanobu; Wada, Motomu; Yasuno, Kiyoshi; Sota, Kou; Ito, Nobuo; and Nakai, Yasuto, 3,720,652.

Wada, Shoji. Method for removing cutting and grinding burrs from machined injection needle tubes. 3,720,021, Cl. 51-28.00r.

Wada, Takashi: *See—*
Yukinaga, Hisajiro; Nan Jo, Yoshimasa; and Wada, Takashi, 3,720,530.

Wadlow, David E., to United Aircraft Corporation. Dynamic rotation of cathode ray tube display. 3,720,860, Cl. 315-26.000.

Wagner, Fritz: *See—*
Drnges, Ernst; and Wagner, Fritz, 3,720,836.

Wahlbeck, Erik H., Firma: *See—*
Wahlbeck, Hans Gustav Erik, 3,720,391.

Wahlbeck, Hans Gustav Erik, to Wahlbeck, Erik H., Firma. Band of parallel, oppositely curbed chains soldered together at the link solder joints. 3,720,391, Cl. 245-4.000.

Wakamatsu, Aizu: *See—*
Isobe, Takehiro; Shimazu, Toshio; Ogawa, Koji; Arake, Yukio; Wakamatsu, Aizu; and Hashimoto, Tatsuji, 3,720,510.

Waldmann, Hans: *See—*
Nasser, Gamal El Din; and Waldmann, Hans, 3,720,071.

Walker, Charles C.: *See—*
Jackson, Harry Y.; Walker, Charles C.; and Ramoska, John, 3,720,077.

Walker, Joseph J.; and Bell, Oran M. Ankle hitch. 3,720,206, Cl. 128-84.00r.

Walsh, Thomas C.: *See—*
Plowman, James S.; and Walsh, Thomas C., 3,720,480.

Wanner, Karl; Schmidt, Wolfgang; Bleicher, Manfred; Sigg, Horst; Lehmann, Werner; and Burklin, Max, to Bosch, Robert, G.m.b.H. Portable torque and impulse transmitting machine. 3,720,269, Cl. 173-48.000.

Ward, Sonne G. Snowmobile loading and unloading device for pickup trucks. 3,720,335, Cl. 214-505.000.

Warkentin, Aaron James. Box filling apparatus. 3,720,039, Cl. 53-59.00w.

Warner & Swasey Company, The: *See—*
Klein, John, 3,720,814.

Wartman, Lloyd H.; and King, Paul A., to Union Carbide Corporation. Method for reducing the dynamic drag of a turbulent aqueous stream. 3,720,216, Cl. 137-13.000.

Wasley, William L.: *See—*
Pittman, Allen G.; and Wasley, William L., 3,720,630.

Watanabe, Takao: *See—*
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Waters, Robert S.; and Spohr, Albert R., to Sunbeam Corporation. Reciprocating manicure device. 3,720,851, Cl. 410-50.000.

Watson, George A.; and Hamond, Arthur H., Jr., to AMP Incorporated. Data transmitting system. 3,720,790, Cl. 179-15.0al.

Watson, James M.: *See—*
Daniels, Calvin L.; and Watson, James M., 3,720,727.

Watson, William J.; and Husband, Edwin H., to Texas Instruments, Incorporated. Open-ended computer with selectable 1/0 control. 3,720,920, Cl. 340-172.500.

Watts, Malcolm Lehany: *See—*
Mansfield, Geoffrey Harry; and Watts, Malcolm Lehany, 3,720,600.

Way, Stewart, to Westinghouse Electric Corporation. Magnetohydrodynamic power system with semi-closed cycle. 3,720,850, Cl. 310-11.000.

Waznys, Peter J.; and Bart, Philip D., to Remco Industries, Inc. Remote controlled bucking toy vehicle. 3,720,019, Cl. 46-244.00a.

Weatherhead Company, The: *See—*
Pauly, Bruce H.; Nicol, John; and Chen, Karl K., 3,720,088.

Weaver, George D. Steered, high speed vehicle. 3,720,283, Cl. 180-79.100.

Webb, Jervis B., Company: *See—*
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Webster, William C.: *See—*
Smith, Charles L.; and Webster, William C., 3,720,609.

Wegmann, Horst; Smula, Karl Ulrich; Bartz, Lothar; and Stoltefuss, Wilhelm, to Gewerkschaft Eisenhutte Westfalia. Machine for removing sedimentary material from filter beds. 3,720,299, Cl. 198-9.000.

Wehrli, Hansuli; and Jeger, Oskar, to Ciba-Geigy Corporation. 20-Pyrrolecarboxylic acid ester of 20-hydroxy-Δ^{16}-pregnene derivatives. 3,720,667, Cl. 260-239.55r.

Weiberg, Otto: *See—*
Pohl, Gerhard; Rink, Karl-Heinz; Triebel, Wolfgang; Weiberg, Otto; and Weigert, Wolfgang, 3,720,689.

Weigert, Wolfgang: *See—*
Pohl, Gerhard; Rink, Karl-Heinz; Triebel, Wolfgang; Weiberg, Otto; and Weigert, Wolfgang, 3,720,689.

Weiner, Joel Ana: *See—*
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Weissenfels, Franz: *See—*
Junger, Hans; Kotzsch, Hans-Joachim; Vahlensieck, Hans-Joachim; and Weissenfels, Franz, 3,720,642.

Welch, Arnold D.; and Dolfini, Joseph Edward, to Squibb, E. R., & Sons, Inc. Acyloxymethyl esters of alpha-ureidocyclo-hexadie nylakylene-penicillins. 3,720,665, Cl. 260-239.100.

Wellekens, John F. Padlock type locks. 3,720,083, Cl. 70-38.00a.

Wenk, Jurgen: *See—*
Vieweg, Gunther; Kappius, Friedrich; Ott, Hans; and Wenk, Jurgen, 3,720,852.

Werner, Bruhl: *See—*
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Werner, Hugo: *See—*
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West, Jerry B.: *See—*
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West Laboratories, Inc.: *See—*
Goldberg, Raymond; and Shaw, Irving F., 3,720,250.

West, Roger F., to United Aircraft Corporation. High voltage slewing of penetration tube gun. 3,720,781, Cl. 178-5.4pe.

Western Electric Company, Incorporated: *See—*
Fagerstrom, Joseph W.; and Robbins, Frederick E., 3,719,989.

Westinghouse Air Brake Company: *See—*
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Kamner, Haim J., 3,720,331.

Westinghouse Electric Corporation: *See—*
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Andrews, Harry N.; Frisch, Erling; Singleton, Norman R.; and Stein, Phillip C., 3,720,222.
Avellar, Karl B.; Buchanan, James E.; and Higgins, Edward R., 3,720,866.
Barnett, Eugene J.; and Shreffler, Wesley E., 3,720,196.
Brody, Thomas P., 3,720,856.
Carlson, Norman R.; Putman, Richard E. J.; and Carleton, James T., 3,720,404.
Feather, Landis E.; and Morris, Louis, 3,720,897.
Gilmore, John F.; and Epting, Roy W., 3,720,826.
Goldberg, Newton N.; and Fergason, James L., 3,720,658.
Greenwood, Albert C., 3,720,894.
Hirayama, Chikara; and Maniero, Daniel A., 3,720,499.
Jansen, Robert J., 3,720,074.
Reeves, John R.; Dow, Bruce R.; and Thompson, Francis T., 3,720,845.
Shephard, Basil S., 3,720,107.
Way, Stewart, 3,720,850.

Wheatley, Thomas, Jr. Full opening wafer valve. 3,720,225, Cl. 137-268.000.

Wheatley, Thomas, Jr. Full-bore pipeline check valves adapted for rearrangement into alternative body styles. 3,720,228, Cl. 137-454.200.

White, Eugene B., to Filters International, Inc. Reverse flow aquarium filter device. 3,720,319, Cl. 210-169.000.

White, William E.: *See—*
Dali, George J.; and White, William E., 3,720,462.

Whitehouse, David John: *See—*
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Whitney, W. A., Corporation: *See—*
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Wickman Machine Tool Sales Limited: *See—*
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Widdig, Arno; Kuhle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, to Bayer Aktiengesellschaft. Substituted amidophenylthioureas. 3,720,682, Cl. 260-294.80h.

Wide, Leif E.: *See—*
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Wieden, Horst: *See—*
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Wiemers, Karl-Josef, to Rheinmetall G.m.b.H. Barrel moving device for guns. 3,720,132, Cl. 89-43.00r.

Wieworowski, Tadeusz Karol; and Miller, David James, to Freeport Minerals Company. Selective recovery of cobalt from an ammoniacal carbonate solution containing cobalt and nickel. 3,720,750, Cl. 423-150.000.

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Wiley, Bruce F., to Phillips Petroleum Company. Pressure control. 3,720,487, Cl. 417-572.000.
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Wilkinson, Frank: *See*—
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Wilkinson, John N., to Optical Radiation Corporation. Projection light source and optical system. 3,720,460, Cl. 352-198.000.
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Willinger, Allan H., to Metaframe Corporation. Aquarium filter. 3,720,317, Cl. 210-94.000.
Wilmot, Richard D.; Bradshaw, Oscar G.; and Wiggins, David G., to Hughes Aircraft Company. Video processing system. 3,720,942, Cl. 343-7.700.
Wilson, Donald K.: *See*—
Swartz, Jerome; and Wilson, Donald K., 3,720,457.
Wilson, Harold W., to Golden Cycle Corporation, The. The process for the netrapment and recovery of sulfur dioxide gas. 3,720,754, Cl. 423-244.000.
Wilson, Haydn, to Kent Instruments Limited. Apparatus for measurement of gas mixture properties. 3,720,594, Cl. 204-195.00s.
Wilson, Robert J.; and Naden, Robert W. Structural surface covering and method of making a cover element therefor. 3,720,031, Cl. 52-520.000.
Wily, John L.: *See*—
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Wimmer, Robert. Production of glass fiber-reinforced plastic articles. 3,720,540, Cl. 117-139.000.
Windmoller & Holscher: *See*—
Rocker, Herman, 3,720,040.
Winquist, Knut Ludvig; and Backman, Sture Anders, to Graffman, Johan H. Fuel-injection carburetors having fuel regulator. 3,720,403, Cl. 261-50.00a.
Woertz, Hans; and Woertz, Oskar, to Woertz, Oskar, Inh. H&O. Electric ribbon cable and connector assembly. 3,720,778, Cl. 174-59.000.
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Wojtowicz, Adam S. Vibro-shower. 3,720,204, Cl. 128-64.000.
Wolf, Edgar, to Redactron Corporation. Speed insensitive reading and writing apparatus for digital information. 3,720,927, Cl. 340-174.10h.
Wolff, Siegfried; Baumgart, Siegfried; Arnold, Ulf-Erick; Pohnisch, Hannelore; and Herbrich, Peter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Testing of elastomeric materials. 3,720,099, Cl. 73-101.000.
Wollner, Johannes; and Tietz, Wolfgang, to Deutsche Texaco Aktiengesellschaft. Aqueous dispersion paints of copolymers of diesters of fumaric acid with vinyl compounds. 3,720,636, Cl. 260-29.610.
Won-Door Corporation: *See*—
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Woodle, Robert A., to Texaco Inc. Method and apparatus for monitoring the molecular weight of hydrocarbon mixtures. 3,720,096, Cl. 73-53.000.
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Woodward, Cyril H. T. Automatic sheet winding apparatus and method of winding a skid of sheet material. 3,720,407, Cl. 271-18.00r.
Woodward, Robert Newell; and Sidebotham, Nelson Robert, to Eastman Kodak Company. Silver halide emulsions stabilized with manganous salts. 3,720,516, Cl. 96-110.000.
Wright, Donald R., to Dow Chemical Company, The. Method for the preparation of walled structures. 3,720,556, Cl. 156-156.000.
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Yamada, Kouichi; and Yagi, Osami, to Nippon Oil Company, Limited. Process for the production of monohydroxy carboxylic acids. 3,720,584, Cl. 195-49.000.
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Yost, Edward F., Jr., to Spectral Data Corporation. Multispectral camera. 3,720,146, Cl. 95-12.200.
Young, Einar T., to Sun Oil Company. Remotely operable register resetting mechanism. 3,720,370, Cl. 235-94.00r.
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Zanker, Klaus Joachim, to Kent Instruments Limited. Flowmeters. 3,720,104, Cl. 73-194.00b.
Zarowin, Charles B., to International Business Machines Corporation. Metal vapor discharge tube using metal and semi-metal compounds in a discharge tube. 3,720,877, Cl. 330-4.300.
Zastawny, Jaroslaw, to Canron Limited. Pipe coupling. 3,720,428, Cl. 285-368.000.
Zaunius, Giedre Maria: *See*—
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Zucca, Mark L. Pick proof lock. 3,720,085, Cl. 70-358.000.
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Schindler, Walter; Schmid, Erich; and Zuest, Armin, 3,720,677.
Zuk, Paul, to Bell Telephone Laboratories, Incorporated. Low distortion signal oscillator. 3,720,886, Cl. 331-110.000.
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Zweegers, Petrus Wilhelmur. Agricultural implement for working crop lying on the field. 3,720,053, Cl. 56-370.000.

LIST OF REISSUE PATENTEES

TO WHOM

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Bederman, Seymour, and L. G. Lankford, to International Business Machines Corp. Method and apparatus for selecting interfitting parts for assembly. Re. 27,600, 3–13–73, Cl. 29—407.

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Thompson, Brian H., and Majumdar. Re. 27,599.

Talbert, Milton L., to Dresser Industries, Inc. Large-diameter earth boring bit. Re. 27,597, 3–13–73, Cl. 175—334.

Thompson, Brian H., and B. B. Majamdar, to The Gas Council. Process for the production of a gas containing gaseous hydrocarbons. Re. 27,599, 3–13–73, Cl. 48—213.

Westinghouse Electric Corp.: *See*—
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Rieger, Otto, deceased, by G. Rieger, legal representative, to Mikkelsens, Inc. Begonia plant. 3,317, 3–13–73, Cl. 68.

Rieger, Otto, deceased, by G. Rieger, legal representative, to Mikkelsens, Inc. Begonia plant. 3,318, 3–13–73, Cl. 68.

Rieger, Otto, deceased, by G. Rieger, legal representative, to Mikkelsens, Inc. Begonia plant. 3,319, 3–13–73, Cl. 68.

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Bajusz, Harold F. Pen and pencil combination. 226,466, 3–13–73, Cl. D74—17.

Barnes, Phillips H., to Packaging Techniques, Inc. Door lock. 226,472, 3–13–73, Cl. D8—109.

Beach-Buoy, Inc.: *See*—
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Becker, Larry F.: *See*—
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Benty, John L., and D. Friedman, to Clairol Inc. Combined hair dryer and styling attachment therefor. 226,510, 3–13–73, Cl. D86—10.

Bergman, Jack, to Pennwood Numechron Co. Digital clock-lamp. 226,494, 3–13–73, Cl. D42—7.

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Bobrowski, Louis G., to The Stanley Works. Door bolt lock. 226,473, 3–13–73, Cl. D8—131.

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Conn, Jack S., to Surrey Steel Components Ltd. Tool for clearing blocked pipes. 226,471, 3–13–73, Cl. D8—68.

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Dushek, Charles D., to Sears, Roebuck and Co. Electric barbecue grill and oven combination. 226,509, 3–13–73, Cl. D81—10.

Edwards, Walter J., to King of the Road Enterprises, Inc. Illuminable television support and room divider. 226,467, 3–13–73, Cl. D6—181.

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Genaro, Donald M., and G. W. Reichard, Jr., to Bell Telephone Laboratories, Inc. Combination microphone and control stand for a loudspeaking telephone set. 226,487, 3–13–73, Cl. D26—14.

Gibbs, Kenneth E., to Bissell Inc. Hand held fluid dispenser and brush for cleaning upholstery or the like. 226,462, 3–13–73, Cl. D4—7.

Gilson, Channing W., to A-T-O Inc. Smoke detector. 226,508, 3–13–73, Cl. D72—1.

Glaberson, Martin, to Warner-Lambert Co. Tray for releasably engaging a razor and a blade cartridge dispenser. 226,478, 3–13–73, Cl. D9—186.

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Hori, Heihachi. Eyeglasses case. 226,502, 3–13–73, Cl. D57—1.

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Kattelmann, Harry R.: *See*—
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Kitai, Isao, to Sharp Kabushiki Kaisha. Electronic calculating machine. 226,485, 3–13–73, Cl. D26—5.

Madonia, Claogero. Inflatable kite. 226,493, 3–13–73, Cl. D34—15.
Mauro, Richard. Gun sight. 226,480, 3–13–73, Cl. D22—8.
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Norton, Willard S. Combined pneumatic raft and sun bathing support structure. 226,504, 3–13–73, Cl. D71—1.
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Quanrud, Larry D.: *See*—
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CLASSIFICATION OF PATENTS

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741 3,720,033
742 3,720,034

CLASS 53
3 3,720,035
14 3,720,036
21FC 3,720,037
39 3,720,038
59W 3,720,039
62 3,720,040

CLASS 55
25 3,720,042
29 3,720,041
74 3,720,043
159 3,720,044
306 3,720,045
414 3,720,046

CLASS 56
15.6 3,720,047
15.9 3,720,048
291 3,720,049
330 3,720,050
3,720,051
346 3,720,052
370 3,720,053

CLASS 57
9 3,720,054
140J 3,720,055

CLASS 60
1 3,720,056
39.02 3,720,057
39.74R 3,720,058
226R 3,720,060
421 3,720,059
468 3,720,061

CLASS 61
1F 3,720,062
11 3,720,063
35 3,720,064
36A 3,720,065
46 3,720,067
46.5 3,720,066
53 3,720,068
72.3 3,720,069
72.6 3,720,070

CLASS 62
42 3,720,071
54 3,720,072
183 3,720,073
272 3,720,074
467 3,720,075

CLASS 64
27NM 3,720,076
29 3,720,077

CLASS 65
21 3,720,505

CLASS 66
133 3,720,078

CLASS 68
6 3,720,079
19.1 3,720,080
132 3,720,081

CLASS 70
25 3,720,082
38A 3,720,083
264 3,720,084
358 3,720,085

CLASS 72
194 3,720,086
364 3,720,087
402 3,720,088

CLASS 73
3 3,720,089
4R 3,720,090
11 3,720,091
23.1 3,720,092
27R 3,720,093
37 3,720,094
38 3,720,095
53 3,720,096
55 3,720,097
67.7 3,720,098
101 3,720,099
144 3,720,100
161 3,720,101
186 3,720,102
190H 3,720,103
194A 3,720,105
194B 3,720,104
273 3,720,106
363.007 3,720,107
398R 3,720,108
421B 3,720,109
460 3,720,110

CLASS 74
196 3,720,112
236 3,720,113
424.6 3,720,114
3,720,115
459 3,720,116
489 3,720,111
798 3,720,117

CLASS 75
24 3,720,506
135 3,720,507
147 3,720,508
171 3,720,509
178AM 3,720,510
214 3,720,511
221 3,720,512

CLASS 82
2B 3,720,120
2.7R 3,720,119
4C 3,720,121
24R 3,720,122
34A 3,720,123
40 3,720,124

CLASS 83
146 3,720,125
344 3,720,126
523 3,720,244
550 3,720,127

CLASS 84
1.13 3,720,776
94 3,720,128

CLASS 85
9R 3,720,129

CLASS 89
41ME 3,720,131
43R 3,720,132
126 3,720,133

CLASS 90
11R 3,720,134
14 3,720,135

CLASS 91
1 3,720,138
35 3,720,136
47 3,720,118
176 3,720,139
279 3,720,137

CLASS 92
87 3,720,140

CLASS 93
33 3,720,141

CLASS 95
1 3,720,143
10CT 3,720,144
11.5R 3,720,145
12.2 3,720,146
44C 3,720,148
44R 3,720,151
44 3,720,149
53EB 3,720,152
86 3,720,147
94G 3,720,150

CLASS 96
1R 3,720,513
1.5 3,720,514
38.4 3,720,515
110 3,720,516

CLASS 98
86 3,720,153
110 3,720,154

CLASS 99
35 3,720,517
71 3,720,518
140N 3,720,519
140R 3,720,520
141R 3,720,521
171CP 3,720,522
3,720,523
171B 3,720,524
332 3,720,156
337 3,720,155
421H 3,720,157

CLASS 100
4 3,720,158
118 3,720,159
160 3,720,160
189 3,720,161

CLASS 101
39 3,720,162
169 3,720,163
463 3,720,164

CLASS 102
16 3,720,165
22 3,720,166
34.4 3,720,167
67 3,720,168
90 3,720,169
92.3 3,720,170
95 3,720,171

CLASS 104
172S 3,720,172

CLASS 105
224.1 3,720,175
271 3,720,173
376 3,720,174

CLASS 106
1 3,720,525
39.6 3,720,526
85 3,720,527
90 3,720,528
3,720,529
146 3,720,530
288B 3,720,531
308Q 3,720,532

CLASS 108
58 3,720,176

CLASS 112
102 3,720,177
168 3,720,178

CLASS 114
16G 3,720,179
102 3,720,180

CLASS 116
63P 3,720,181
65 3,720,182

CLASS 117
21 3,720,533
36.2 3,720,534
46CA 3,720,535
47R 3,720,536
50 3,720,537
72 3,720,538
138.8F 3,720,539
139 3,720,540
201 3,720,542
211 3,720,541
218 3,720,543

CLASS 118
637 3,720,183

CLASS 119
51.11 3,720,185
51.12 3,720,186
51.5 3,720,184
98 3,720,187

CLASS 122
41 3,720,188
250R 3,720,189

CLASS 123
32EA 3,720,190
3,720,191
3,720,192
3,720,193
148E 3,720,194
149D 3,720,195

CLASS 126
197 3,720,196
270 3,720,197
400 3,720,198

CLASS 128
1D 3,720,199
3,720,200
2.05D 3,720,201
2.06E 3,720,209
2.08 3,720,202
4 3,720,203
64 3,720,204
67 3,720,205
84R 3,720,206
142 3,720,207
142.5 3,720,208
214.4 3,720,210
218A 3,720,211
288 3,720,212
395 3,720,213

CLASS 131
17 3,720,214

CLASS 134
165 3,720,215

CLASS 137
13 3,720,216
75 3,720,220
112 3,720,221
154 3,720,222
183 3,720,223
227 3,720,224
268 3,720,225
334 3,720,226
339 3,720,227
454.2 3,720,228
527.8 3,720,229
564.5 3,720,230
576 3,720,231
624.014 3,720,232
625.17 3,720,233
625.36 3,720,234
804 3,720,219
805 3,720,217
839 3,720,218

CLASS 138
137 3,720,235

CLASS 139
12 3,720,238
54 3,720,236
170.3 3,720,237

CLASS 140
2 3,720,239

CLASS 141
6 3,720,242
9 3,720,240
25 3,720,241

CLASS 142
7 3,720,243

CLASS 144
3D 3,720,245
3,720,246
3,720,247
34R 3,720,248
309AC 3,720,249

CLASS 148
2 3,720,545
6.14R 3,720,547
3,720,548
6.16 3,720,549
11.5R 3,720,550
14 3,720,544
126 3,720,551
156 3,720,546

CLASS 149
3 3,720,552
19 3,720,553

CLASS 150
52R 3,720,250

CLASS 151
21R 3,720,251

CLASS 152
361 3,720,252

CLASS 156
62.6 3,720,554
102 3,720,555
156 3,720,556
3,720,557
199 3,720,558
202 3,720,559
268 3,720,560
272 3,720,561
291 3,720,562
306 3,720,563
477B 3,720,564
497 3,720,565
544 3,720,566

CLASS 159
4F 3,720,253

CLASS 160
193 3,720,254
199 3,720,255
392 3,720,256

CLASS 161
.5 3,720,567
48 3,720,568
57 3,720,569
58 3,720,570
73 3,720,571
143 3,720,572
156 3,720,573
3,720,574
170 3,720,575
173 3,720,576

CLASS 162
67 3,720,577
116 3,720,578
162 3,720,579

CLASS 164
75 3,720,257

CLASS 165
2 3,720,258
162 3,720,259

CLASS 166
.5 3,720,260
208 3,720,261
298 3,720,262
303 3,720,263
307 3,720,265
311 3,720,264
312 3,720,266
314 3,720,267

CLASS 169
2R 3,720,268

CLASS 173
48 3,720,269
163 3,720,270

CLASS 174
15C 3,720,777
51 3,720,783

59 3,720,778

CLASS 175

57 3,720,271
61 3,720,272
334 Re.27,597
335 3,720,273
372 3,720,274

CLASS 176

36R 3,720,580
37 Re.27,598
87 3,720,581

CLASS 177

3 3,720,275
81 3,720,286
122 3,720,276

CLASS 178

5.2R 3,720,779
3,720,780
5.4PE 3,720,781
5.4R 3,720,782
6.6A 3,720,785
6.6R 3,720,784
7.1 3,720,786

CLASS 179

1B 3,720,788
1E 3,720,787
15AL 3,720,790
15BC 3,720,789
15BM 3,720,791
18GF 3,720,792
18HB 3,720,793
100.2MD 3,720,795
100.2PM 3,720,794
100.41K 3,720,796

CLASS 180

5R 3,720,277
6.5 3,720,281
24 3,720,278
54A 3,720,279
64R 3,720,280
79.1 3,720,283
79.2R 3,720,282
114 3,720,284

CLASS 181

31B 3,720,285

CLASS 184

1.5 3,720,287
6.4 3,720,288
15A 3,720,289
55A 3,720,290

CLASS 187

20 3,720,291
29R 3,720,292

CLASS 188

73.5 3,720,293

CLASS 192

3.52 3,720,296
46 3,720,294
141 3,720,295

CLASS 195

30 3,720,582
31R 3,720,583
49 3,720,584
98 3,720,585

CLASS 197

17 3,720,297
182 3,720,298

CLASS 198

9 3,720,299
20R 3,720,300
32 3,720,301
127 3,720,302

CLASS 200

61.08 3,720,797
144B 3,720,798
148R 3,720,799
167R 3,720,800
172A 3,720,801
3,720,802

CLASS 202

173 3,720,586

CLASS 203

58 3,720,587

CLASS 204

14N 3,720,589
37R 3,720,590
51 3,720,588
59R 3,720,591
159.15 3,720,592
180G 3,720,593
195S 3,720,594
206 3,720,595
211 3,720,596
284 3,720,597
328 3,720,598

CLASS 205

19 3,720,448

CLASS 206

46F 3,720,303
46R 3,720,304
47R 3,720,305

CLASS 208

33 3,720,599
47 3,720,600
111 3,720,601
216 3,720,602
251R 3,720,603
310 3,720,604
321 3,720,605

CLASS 209

1 3,720,306
10 3,720,307
11 3,720,308
73 3,720,309
74 3,720,310
79 3,720,311
130 3,720,312
144 3,720,313
3,720,314
211 3,720,315
254 3,720,316

CLASS 210

11 3,720,606
23 3,720,607
56 3,720,608
59 3,720,609
94 3,720,317
169 3,720,318
3,720,319
199 3,720,320
238 3,720,322
493 3,720,323
500 3,720,321

CLASS 211

45 3,720,324

CLASS 213

8 3,720,325

CLASS 214

1H 3,720,326
16.4A 3,720,327
38D 3,720,328
84 3,720,329
86A 3,720,330
90R 3,720,331
140 3,720,332
450 3,720,333
3,720,334
505 3,720,335
3,720,336
674 3,720,337
776 3,720,338

CLASS 215

1C 3,720,339
3,720,340
6 3,720,341
9 3,720,342
38A 3,720,343

CLASS 217

26.5 3,720,344

CLASS 219

10.69 3,720,803
69V 3,720,804
152 3,720,805
216 3,720,806
441 3,720,807
469 3,720,808

CLASS 220

2.1A 3,720,345
22.3 3,720,346
46R 3,720,347
54 3,720,348
3,720,349

CLASS 221

14 3,720,350

CLASS 222

1 3,720,351
132 3,720,352
380 3,720,353
386 3,720,354
400.7 3,720,355
569 3,720,356

CLASS 223

85 3,720,357

CLASS 224

42.08 3,720,358

CLASS 225

97 3,720,359

CLASS 226

3 3,720,360
7 3,720,361
36 3,720,362
51 3,720,363

CLASS 227

109 3,720,364

CLASS 229

2.5 3,720,365
37E 3,720,366
62 3,720,367

CLASS 233

26 3,720,368

CLASS 235

61.11E 3,720,809
61.11R 3,720,810
78 3,720,369
92PC 3,720,812
92C 3,720,811
94R 3,720,370
151.11 3,720,814
3,720,817
151.13 3,720,815
151.3 3,720,813
3,720,816
151.32 3,720,818
153AE 3,720,819
156 3,720,820
172 3,720,821

CLASS 237

2A 3,720,371
12.3B 3,720,372

CLASS 239

127 3,720,373
177 3,720,374
210 3,720,375
308 3,720,376
336 3,720,377
397 3,720,378

CLASS 240

1.3 3,720,822
2.25 3,720,823
6.4F 3,720,824
10.65 3,720,825
11.4H 3,720,826
46.59 3,720,827

CLASS 241

20 3,720,379
3,720,380

CLASS 242

35.5R 3,720,382
47.01 3,720,384
56R 3,720,381
74.44 3,720,383
75.45 3,720,385
217 3,720,386

CLASS 244

17.25 3,720,387
134A 3,720,388
135B 3,720,389
149 3,720,390

CLASS 245

4 3,720,391

CLASS 248

20 3,720,392
125 3,720,394
205R 3,720,395
361A 3,720,393
378 3,720,396

CLASS 249

57 3,720,397

CLASS 250

49.5B 3,720,829
49.5R 3,720,828
51.5 3,720,830
71.5R 3,720,831
83.3HP 3,720,835
83.3D 3,720,833
83.3H 3,720,832
3,720,834
108FS 3,720,836
206 3,720,837
207R 3,720,838

CLASS 252

8.5C 3,720,610
18 3,720,611
32.5 3,720,612
32.7E 3,720,613
33 3,720,615
46.7 3,720,614
51.5R 3,720,616
62.1 3,720,617
3,720,619
62.56 3,720,618
107 3,720,620
135 3,720,621
188.3 3,720,622
316 3,720,623
357 3,720,624
377 3,720,625
413 3,720,626
430 3,720,627
442 3,720,628
535 3,720,629

CLASS 254

51 3,720,398
134.3PA 3,720,399
172 3,720,400

CLASS 256

19 3,720,401

CLASS 259

72 3,720,402

CLASS 260

2A 3,720,630
2.5AW 3,720,632
2.5AY 3,720,631
17.4ST 3,720,633
18PF 3,720,634
19EP 3,720,648
29.6T 3,720,636
29.7H 3,720,637
30.6R 3,720,638
33.4EP 3,720,639
33.6R 3,720,640
37N 3,720,641
37R 3,720,642
41.5A 3,720,643
46.5E 3,720,644
47EP 3,720,645
63HA 3,720,646
75M 3,720,649
78L 3,720,650
78.5R 3,720,651
80.7 3,720,652
80.72 3,720,653
85.3R 3,720,654
87.5B 3,720,655
89.5N 3,720,656
112.7 3,720,657
207.1 3,720,658
209.5 3,720,659
212 3,720,660
227 3,720,661
233.5 3,720,662
3,720,663
239.1 3,720,664
3,720,665
3,720,666
239.55R 3,720,667
240A 3,720,668
243C 3,720,669
244R 3,720,670
249.5 3,720,671
250R 3,720,672
3,720,673
256.4 3,720,674
268TR 3,720,676
3,720,677
268C 3,720,675
273 3,720,678
281 3,720,679
293.57 3,720,680
293.66 3,720,681
294.8H 3,720,682
304 3,720,683
306.8D 3,720,684
307G 3,720,685
309.2 3,720,686
332.5 3,720,687
340.5 3,720,688
343 3,720,689
345.2 3,720,690
345.9 3,720,691
346.7 3,720,692
377 3,720,693
397.5 3,720,694
404.8 3,720,695
419 3,720,696
429R 3,720,697
448AD 3,720,698
448.8R 3,720,699
463 3,720,700
465D 3,720,702
468H 3,720,703
475FR 3,720,701
491 3,720,704
494 3,720,705
3,720,706
505P 3,720,707
519 3,720,708
3,720,709
3,720,710
533R 3,720,711
557R 3,720,712
558A 3,720,713
559H 3,720,714
564G 3,720,715
583J 3,720,716
593A 3,720,717
593P 3,720,718
601R 3,720,719
615B 3,720,720
618B 3,720,721
620 3,720,722
653.4 3,720,723
658R 3,720,724
668D 3,720,725
671C 3,720,726
672T 3,720,647
674A 3,720,727
674R 3,720,728
676R 3,720,729
683R 3,720,730
683.58 3,720,731
683.62 3,720,732
860 3,720,635
862 3,720,733
895 3,720,734
899 3,720,735
959 3,720,736
973 3,720,737

CLASS 261

50A 3,720,403

CLASS 264

.5 3,720,739
8 3,720,737
37 3,720,738
65 3,720,740
82 3,720,741
102 3,720,742
168 3,720,743
205 3,720,744
206 3,720,745
219 3,720,746
246 3,720,747

CLASS 266

34R 3,720,404

CLASS 267

64 3,720,405
139 3,720,406

CLASS 271

18R 3,720,407
3,720,408
29 3,720,409

CLASS 273

67A 3,720,410
86R 3,720,412
102.4 3,720,411
182R 3,720,413

CLASS 274

10S 3,720,414
39A 3,720,415

CLASS 277

9 3,720,418
53 3,720,419
180 3,720,420

CLASS 279

1S 3,720,416
82 3,720,417

CLASS 280

28 3,720,421
35 3,720,422
87A 3,720,423
124F 3,720,424
3,720,425
150AB 3,720,426
405R 3,720,427

CLASS 285

368 3,720,428

CLASS 287

52.06 3,720,429
62 3,720,430

CLASS 290

37 3,720,839
55 3,720,840

CLASS 292

220 3,720,432
264 3,720,431

CLASS 294

64R 3,720,433
74 3,720,434
88 3,720,435
3,720,436

CLASS 296

1A 3,720,437
23R 3,720,438
28 3,720,439
137B 3,720,440

CLASS 297

284 3,720,441
348 3,720,442
383 3,720,443
390 3,720,445
463 3,720,444

CLASS 298

22R 3,720,446

CLASS 303

21B 3,720,447

CLASS 307

68 3,720,842
88.3 3,720,843
112 3,720,844
116 3,720,845
141 3,720,858
221C 3,720,841
238 3,720,846
245 3,720,847
251 3,720,848

CLASS 308

3R 3,720,449
214 3,720,450

CLASS 310

8 3,720,849
11 3,720,850
43 3,720,914
90 3,720,852

CLASS 312

268 3,720,451

CLASS 313

60 3,720,853
92B 3,720,854
229 3,720,855
309 3,720,856

CLASS 315

10 3,720,857
23 3,720,859
26 3,720,860
101 3,720,861

CLASS 316

24 3,720,452

CLASS 317

258 3,720,862

CLASS 318

52 3,720,863
138 3,720,864
3,720,865
654 3,720,866

CLASS 321

47 3,720,868

CLASS 323

43.5R 3,720,867

CLASS 324

29.5 3,720,869
34R 3,720,870
78D 3,720,871
133 3,720,872
158T 3,720,873

CLASS 325

16 3,720,874
38B 3,720,875
465 3,720,876

CLASS 330

4.3 3,720,877
12 3,720,878
26 3,720,879
29 3,720,880
107 3,720,881

CLASS 331

3 3,720,882
55 3,720,883
94.5 3,720,884
3,720,885
110 3,720,886
142 3,720,887

CLASS 333

7 3,720,888
83 3,720,889
98R 3,720,890

CLASS 335

13 3,720,891
135 3,720,892
138 3,720,893
204 3,720,894
205 3,720,895
206 3,720,896

CLASS 336

60 3,720,897

CLASS 337

95 3,720,898
348 3,720,899

CLASS 338

25 3,720,900
32R 3,720,901

CLASS 339

2R 3,720,902
14R 3,720,903
34 3,720,904
97R 3,720,905
101 3,720,906
176MP 3,720,907

CLASS 340

8R 3,720,908
3,720,909
15.5BH 3,720,912
18R 3,720,910
31R 3,720,913
52F 3,720,911
52H 3,720,915
61 3,720,916
67 3,720,917
81R 3,720,918
166R 3,720,919
172.5 3,720,920
173CC 3,720,926
173LM 3,720,921
3,720,923
3,720,924
173R 3,720,922
3,720,925
174PA 3,720,929
174TF 3,720,928
174.1B 3,720,930
174.1E 3,720,931
3,720,932
174.1H 3,720,927
183 3,720,933
207 3,720,934
248R 3,720,935
261 3,720,936
283 3,720,937
365S 3,720,938

366R	3,720,939	117	3,720,455	102	3,720,470		CLASS 415	244	3,720,754	270	3,720,769
CLASS 343		157P	3,720,456	108	3,720,471	219	3,720,478	252	3,720,751	273	3,720,770
6R	3,720,940	157	3,720,457	124	3,720,472		CLASS 416	255	3,720,752	274	3,720,771
7A	3,720,941	227	3,720,458		CLASS 393	198	3,720,479	307	3,720,755	277	3,720,772
7.7	3,720,942		CLASS 352	18E	3,720,944	220	3,720,480	329	3,720,753	295	3,720,773
14	3,720,949	113	3,720,459		CLASS 401		3,720,481		3,720,756	303	3,720,774
17.2PC	3,720,950	198	3,720,460	40	3,720,473		CLASS 417	341	3,720,757	319	3,720,775
18A	3,720,951	224	3,720,461		CLASS 404	179	3,720,482	388	3,720,758		CLASS 425
18E	3,720,952		CLASS 353	47	3,720,474	304	3,720,483	447	3,720,759	3	3,720,490
114.5	3,720,945	27	3,720,462	67	3,720,142	401	3,720,484	448	3,720,499	78	3,720,491
119	3,720,946		3,720,463		CLASS 408	413	3,720,485		CLASS 424	107	3,720,492
756	3,720,947		3,720,464	44	3,720,475	440	3,720,486	1	3,720,760	111	3,720,493
771	3,720,953		CLASS 355	71	3,720,476	572	3,720,487		3,720,761	147	3,720,494
CLASS 346		8	3,720,465	226	3,720,477		CLASS 418	58	3,720,762		CLASS 431
7	3,720,943		3,720,466		CLASS 410	45	3,720,489	95	3,720,763	114	3,720,497
106	3,720,954		CLASS 356	50	3,720,851		CLASS 423	114	3,720,764	184	3,720,495
CLASS 350		3	3,720,467		CLASS 412	4	3,720,748	177	3,720,765	353	3,720,496
3.5	3,720,453	4	3,720,468	141	3,720,749	210	3,720,766		CLASS 444		
7	3,720,454	74	3,720,469	360	3,720,488	150	3,720,750	245	3,720,767	1	3,720,948
								250	3,720,768		

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D 2—	309	226,461	68	226,471	D22—	8	226,480		56	226,484	D48—	20	226,496	D71—		226,504
D 4—	7	226,462	109	226,472	D23—	2	226,481	D34—	5	226,489			226,497			226,505
D 6—	55	226,463	131	226,473		12	226,482		14	226,490			226,498			226,506
	59	226,464	154	226,474	D24—	1	226,483		15	226,491	D49—	21	226,499	D72—		226,507
	69	226,465		226,475	D26—	5	226,485			226,492		35	226,500			226,508
	181	226,467	D 9—	25	226,476		14	226,486			226,493	D52—	6	226,501	D74—	17B	226,466
	198	226,468		39	226,477			226,487	D42—	7	226,494	D57—	1	226,502	D81—	10	226,509
	203	226,469		186	226,478			226,488	D44—	1	226,495	D61—		226,503	D86—		226,510
D 8—	37	226,470		294	226,479												

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